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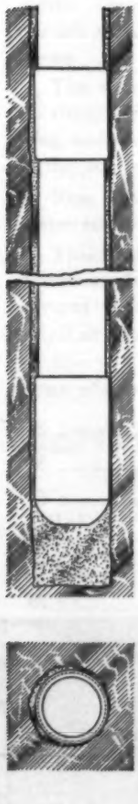

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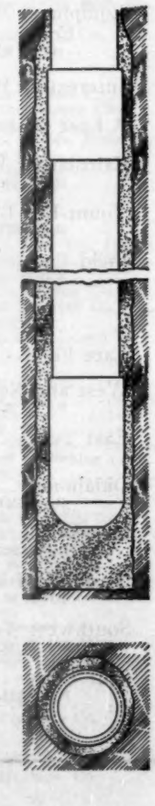

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Big Wells in Michigan and New Mexico and New Pool Extensions in the Gulf Coastal Division

By JAMES McINTYRE

CRUDE oil production in the United States declined 24,411 bbls. per day in the past week, both Oklahoma City and East Texas showing a decline, and the Gulf Coastal Fields producing about the same as in the previous week. Kansas increased its output and produced nearly to its peak reached in May, 1930.

The late Tom Percy, that noted driller of wells in out-of-the-way places 40 years ago, who predicted that Michigan would one day become an important oil state, appears to have had good reason for his prophecy. The largest initial producer east of the Mississippi River in many years was completed in the past week in Vernon Township, Isabella County, Michigan. It flowed 116 bbls. in 16 minutes from Dundee sand and its potential production was variously estimated up to 10,000 bbls. This well was drilled in the Midland Field, largely owned by the Pure Oil Co., which has drilled wells which produced initially as high as 5,000 bbls.

Another important piece of news from the fields was the completion of a 22,940-bbl. well in Section 30-18-38, Hobbs Pool, Lea County, New Mexico. This well actually gauged that quantity of oil and nearly 17,000,000 feet of gas in 24 hours.

Uncertainty as to the value of the Tomball Field in northern Harris County, Texas, in the Gulf Coastal Field was cleared up in part by the completion of a well 1,500 feet southwest of the discovery well. It flowed 59 bbls. an hour, choked. In the same area a well half a mile northwest of the discovery well came in as a gas producer. The Greta Pool was extended 1,000 feet southwest with a good well.

The Texas Railroad Commission has increased the East Texas allowable production to 590,000 barrels per day, but the field has been greatly exceeding its allowable right along and this concession on the part of the Commission had, in itself, little significance.

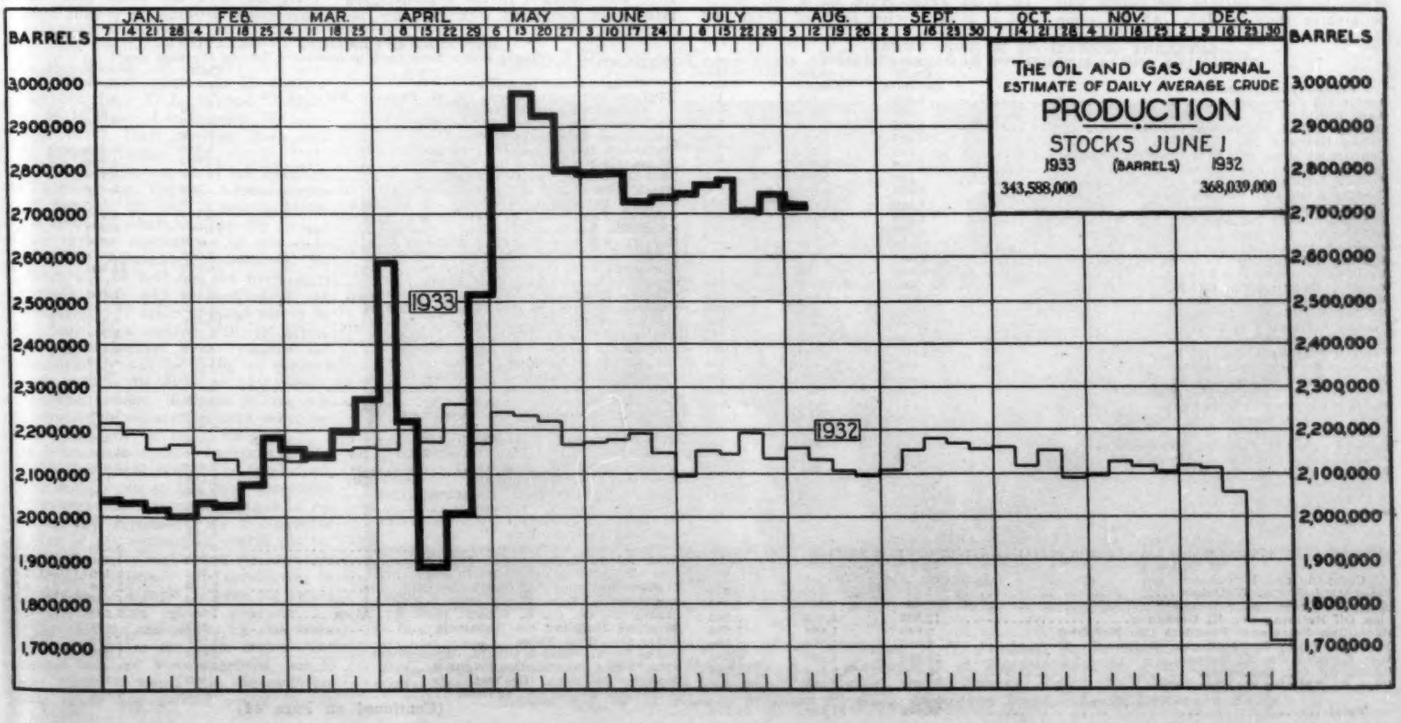
The effort to increase the posted price of Mid-Continent crude oil, putting the price in Oklahoma, Kansas and North and Central Texas up to a top of 75 cents for 40 gravity crude, and putting a flat price of 75 cents per barrel in East Texas, failed because of the refusal of some of the large buyers to meet the advanced prices. It was a costly effort, as those who advanced the prices maintained them as long as there was a chance that they would be met generally. The top price in Kansas and Oklahoma is now 62 cents but in North Central and East Central Texas there are two schedules, one with a 52-cent top and the other a 62-cent top price.

Crude Oil Production in the United States

Estimated daily average production for the week ending August 5, and a comparison with previous week and one year ago, follows:

	Aug. 5	July 29	Aug. 6, 1932
Oklahoma—			
Oklahoma City	227,810	245,615	105,470
Seminole-St. Louis	124,390	138,380	117,545
Remainder of State	216,255	217,145	208,405
Total Oklahoma	568,455	601,140	431,420
East Texas—			
Lathrop	262,915	263,405	125,104
Kilgore	191,090	193,660	99,698
Joiner	170,490	177,875	104,510
Total East Texas	624,495	634,940	329,312
West Texas	159,455	158,197	178,653
North Central Texas	73,163	72,611	74,235
Texas Panhandle	56,737	55,602	55,361
East Central Texas	58,852	58,395	57,546
Gulf Coast—Texas	207,695	207,838	119,196
Southwest Texas	54,210	54,593	60,510
Total State of Texas	1,234,607	1,242,176	874,813
Kansas	130,145	125,620	93,515
North Louisiana	24,610	26,040	29,335
Gulf Coast—Louisiana	45,893	46,460	31,104
Arkansas	37,475	32,320	34,115
Eastern Fields	113,000	110,000	117,000
Rocky Mountain Area	75,770	76,360	83,401
California—			
Santa Fe Springs	54,250	53,750	57,500
Long Beach	73,750	74,250	68,500
Playa Del Rey	11,000	11,250	14,500
Elwood	13,750	14,500	14,000
Kettleman Hills	63,500	61,750	60,250
Remainder of State	275,750	270,750	252,000
Total California	492,000	486,250	466,750
Total United States	2,721,955	2,746,366	2,161,453

Decrease 24,411 Bbls. Daily.



Small Increase in Mid-Continent Refinery Runs Despite Shut Downs in East Texas Field

By C. O. WILLSON

Despite a substantial reduction in East Texas and a smaller decrease in West Texas, total crude oil run to stills in the Mid-Continent in August will show a slight increase over July, according to data from all refining areas received since the first of the month. The August crude runs will average 527,510 bbls. daily, an increase of 1,665 bbls. daily compared with July and an increase of approximately 100,000 bbls. daily over August of last year. The August figure as shown in the accompanying table is about the same as August, 1930, but substantially less than the August totals for 1931 and 1929.

The decrease of 22,415 bbls. in daily crude runs to stills in East Texas reflects the shortage of crude oil brought about by the enforcement of rulings by the Federal Government covering the interstate movement of crude oil produced in violation of the Texas proration law. The same situation applies to the shipments of refined products obtained from the crude oil. The enforcement of the Federal ruling starting the middle of last month immediately was reflected in the drying up of sources of supply for many small refineries which have been built in East Texas over the past two years.

In checking these operations, the latter part of last week several of the plant owners said they expected to be on stream again this week. A suit by interests representing these refiners has been filed in the Supreme Court of the District of Columbia attacking the legality of the Federal Government's action. The matter of a temporary injunction will come up for hearing this week at Washington, D. C., and should it be granted the refiners now closed down or whose operations have been curtailed, presumably could resume on a normal basis. Due to that possibility, the decline shown in the accompanying table may change by the middle of the month and the runs to stills the latter half of the month will be greater than in July. At the same time there also is a possibility that Federal regulations will be tightened and an increasing number of refiners find it difficult to secure crude oil supplies.

All of the larger plants in East Texas are operating although in most cases their runs to stills in August will be less than in July. Several refiners have crude oil in storage and this is being used to supplement current purchases. In West Texas crude oil is not plentiful as it is in other parts of Texas and there has been no general trend to increase plant operations. The unfavorable gasoline market of the past month no doubt has been partially responsible for the reduced runs to stills in West Texas.

Those keeping a monthly check on East Texas refinery operations will find changes in names from time to time among the smaller operators. It will be found that the names of three plants have been changed in the accompanying table when compared with the July report. The changes include Hioctane Refining Co. to the Southport Refining Co., Smith & Harvey Refining Co. to O. K. Refining Co., and the Southern Oil Refining Co. to the Hyland Refining Co. In several cases the name by which a plant is commonly known in the field is not the same as that given by the owners and operators. This has resulted in considerable confusion and some duplication in reporting plant operations.

Late reports show the following plants under construction in East Texas: Big Five Refining Co., Gladewater; Gentry Refining Co., Gladewater; Lacy Petroleum Co., Kilgore; Laprein Refining Co., Kilgore, and Johnson Refining Co., Kilgore. The capacity of these plants is from 500 to 1,000 bbls. each.

Oklahoma

There were several small increases in crude runs to stills at Oklahoma refineries for August. The largest increase in the state was that of the Continental Oil Co., which boosted its Ponca City runs from 17,500 to 22,500 bbls. daily. At Garber, the Fox Refining Co. has leased the refinery owned by the Garber Refineries, Inc., and operated under that name for many years. This refinery is scheduled to resume operations before the end of the month.

Kansas

There were also several increases in Kansas refinery operations. At Arkansas City the Shell Petroleum Corp. increased its runs from 12,000 to 18,000 bbls. daily and the Kanotex Refining Co. at the same point boosted its runs from 6,600 to 8,200 bbls. daily. The runs of the Globe Oil & Refining Co. at McPherson were reduced from 10,000 to 9,000 bbls. daily.

Changes in refinery operations in North Louisiana and Arkansas for August are of minor importance. In Arkansas, the Lion Oil Refining Co. increased its runs from 6,000 to 8,000 bbls. daily at Shreveport, La., and the small plant of the Shreveport Refining Co. is shut down.

Mid-Continent Refinery Operations

Average Daily Crude Runs*

	1929	1930	1931	1932	1933
January	508,550	535,460	478,795	405,910	399,405
February	506,800	519,355	470,125	411,280	407,125
March	514,950	531,500	449,634	401,155	423,445
April	530,530	555,250	497,391	419,750	441,000
May	577,500	574,300	510,540	436,160	470,460
June	583,030	572,250	567,915	440,765	479,987
July	565,800	548,475	588,840	433,255	525,845
August	555,250	526,400	590,545	427,710	527,510
September	552,300	498,710	588,105	430,430	.....
October	544,720	518,800	472,190	401,995	.....
November	545,473	506,700	480,440	408,180	.....
December	540,630	478,360	456,525	416,275	.....

*Based on monthly estimates compiled by The Oil and Gas Journal at start of each month.

Operations by Refinery Districts
(Figures in barrels)

	Aug. 1 Dy. crude capacity	August Dy. crude runs	July Dy. crude runs	August Daily increase
Arkansas	38,000	21,650	20,250	1,400
Kansas	183,000	114,000	107,450	6,550
North Louisiana	41,550	25,300	25,050	250
Oklahoma	306,400	178,300	165,350	12,950
North Central Texas	191,000	91,980	86,855	5,125
West Texas	104,125	38,400	40,595	*2,195
East Texas	112,650	57,880	80,295	*22,415
Total United States	976,725	527,510	525,845	1,665

REFINERY OPERATIONS IN WEST TEXAS
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Aver. daily runs August	Aver. daily runs July
Active Oil Corp., Arno	1,500	(*)	(*)
Aero Refining Co., Pecos Valley	225	(*)	10
Bobrose Oil & Refineries, Luling	2,500	200	300
Coltex Refining Co., Colorado	10,000	7,000	6,500
Concho Refining Co., San Angelo	500	100	100
Cosden Oil Co., Big Spring	15,000	4,000	7,000
Pentex Refining Co., Echo	400	50	50
Grayburg Oil Co., San Antonio	6,000	(*)	(*)
Gulf Refining Co., Sweetwater	5,000	4,000	4,000
Howard County Refining Co., Big Spring	1,500	300	1,000
Humble Oil & Refining Co., San Antonio	5,000	2,750	2,750
Magnolia Petroleum Co., Luling	7,000	4,400	4,000
McNutt Refining Co., El Paso	2,000	700	600
Marathon Oil Co., Del Rio	5,000	(*)	(*)
Moutray Refining Co., Hawley	600	300	280
Misko Refineries, Inc., Mirando City	2,500	1,300	1,300
Nolting Refining Co., Sweetwater	1,000	200	250
Octane Refining Co., Beard	2,000	1,200	1,300
Paramount Refining Co., San Angelo	2,000	200	230
Pasotex Petroleum Co., El Paso	14,000	6,500	2,600
Phoenix Refining Co., Pettus	800	400	400
Phoenix Refining Co., Laredo	600	300	300
Pioneer Oil & Refining Co., Somerset	1,500	800	900
Sinclair Refining Co., El Paso	2,500	600	600
Texas Co., San Antonio	3,000	1,500	1,500
Texas Co., El Paso	2,000	800	700
Texas Petroleum Products Co., Somerset	1,500	400	500
West Texas Refining Co., Pecos City	6,000	(*)	3,000
Wickett Petroleum Co., Wickett	2,500	400	425
Total	104,125	38,400	40,595

*Shut down.

REFINERY OPERATIONS IN ARKANSAS
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Aver. daily runs August	Aver. daily runs July
Berry Asphalt Co., Waterloo	2,000	565	800
Henry H. Cross Co., Smackover	6,000	3,000	3,900
Lion Oil Refining Co., El Dorado	12,000	8,000	6,000
Macmillan Petroleum Products Co., Norphlet	2,000	1,600	1,600
Ouachita Valley Refining Co., El Dorado	2,000	1,350	1,500
Root Refining Co., El Dorado	10,000	4,500	4,500
Simms Oil Co., Smackover	3,000	2,500	2,500
Stephens Refining Co., Stephens	1,000	200	350
Total	38,000	21,650	20,250

REFINERY OPERATIONS IN OKLAHOMA
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Aver. daily runs August	Aver. daily runs July
Altitude Petroleum Corp. (J. H. Peacock Refining Co.), Oklahoma City	3,000	500	500
Anderson-Prichard Oil Corp., Cyril	6,000	4,000	4,000
Associated Petroleum Corp., Allen	8,000	(*)	(*)
Barnsdall Refineries, Inc., Barnsdall	6,000	3,500	3,800
Barnsdall Refineries, Inc., Okmulgee	10,000	5,000	6,700
Bell Oil & Gas Co., Grandfield	4,500	3,100	3,200
Black Gold Refining Co., Oklahoma City	2,500	1,750	1,750
Century Petroleum Co., Tulsa	500	(*)	(*)
Century Petroleum Co., Oklahoma City	2,500	2,000	1,200
Champlin Refining Co., Enid	16,000	8,000	6,000
Cole (L. S.), Refining Co., Oklahoma City	400	200	(*)
Columbia Oil Corp., Oklahoma City	3,500	(*)	(*)
Continental Oil Co., Ponca City	30,000	22,500	17,250
Crescent Refining Co., Holdenville	1,000	(*)	(*)
Cushing Refining & Gasoline Co., Blackwell	1,800	1,800	1,600
Cushing Refining & Gasoline Co., Cushing	4,500	3,000	3,000
Deep Rock Oil Corp., Cushing	10,000	9,000	9,000
Eason Oil Co., Enid	5,000	3,000	2,700
Empire Oil & Refining Co., Okmulgee	4,000	2,700	2,700
Empire Oil & Refining Co., Ponca City	12,000	8,700	8,400
Firestone Refining Co., Oklahoma City	200	(*)	(*)
Garber Refineries, Inc., Garber	3,500	(*)	(*)
Gem Refining Co., Oklahoma City	1,000	(*)	100
Globe Oil & Refining Co., Blackwell	7,500	7,000	6,000
Johnson Oil Refining Co., Cleveland	6,000	5,000	5,000
Major Petroleum Products Co., Oklahoma City	2,000	600	200
Mid-Continent Petroleum Corp., West Tulsa	40,000	20,000	20,000
Marathon Oil Co., Bristow	5,000	3,500	3,000
Oklahoma City Refining Co., Oklahoma City	2,500	100	(*)
Phillips Petroleum Co., Okmulgee	6,000	4,500	4,500
Producers Oil Co., Bristow	2,500	1,000	1,000
Producers & Refiners Corp., West Tulsa	6,000	4,000	3,500
Pure Oil Co., Ardmore	5,000	(*)	(*)
Pure Oil Co., Muskogee	9,000	8,800	8,500
Rock Island Refining Co., Beckett	6,000	4,400	4,200
Sinclair Refining Co., Sand Springs	8,000	2,400	2,400
Sterling Refining Co., Oklahoma City	3,500	2,000	1,500
Sun Oil Co., Yale	5,000	3,000	2,500
Sunray Oil Co. (C. B. Wright, receiver), Allen	7,000	2,600	2,500
Sunshine Refining Co., Seminole	500	(*)	(*)
Texas Co., West Tulsa	15,000	12,000	10,000
Texas Pacific Coal & Oil Co., Wynnewood	2,000	1,500	1,500
Tide Water Oil Co., Drumright	15,000	10,000	10,000
Western Oil Corp., Beckett	2,000	400	350
Wilcox Oil & Gas Co., Bristow	5,000	4,000	4,000

(Continued on Page 44)

General Johnson at Work on Revised Oil Code Following Stormy Hearings at Washington

By CHARLES E. KERN
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Aug. 7.—Gen. Hugh S. Johnson, NRA administrator, is engaged in writing another oil code with an effort to concede some points of view concerning price fixing, but he would not indicate what he might do.

The dispute over whether the Government should regulate prices resulted in the designation of representative committees to work with Johnson.

Axtell J. Byles, president of the American Petroleum Institute, said those opposing price regulation who were members of the Emergency National Committee felt they would not be adequately represented before General Johnson and set up their own committee as follows:

C. B. Ames, Texas Co.; W. S. Farish, chairman Standard of New Jersey; E. G. Seubert, Standard of Indiana; J. Howard Pew, Sun Oil Co.; W. G. Skelly, Skelly Oil Co.; and for marketing, C. E. Arnott, Socony-Vacuum Corp., and Starr Rogers, president of Texas Co.

Those designated to represent the committee of 54, the majority in favor of price regulation, are:

K. R. Kingsbury, president Standard of California; Wirt Franklin, president Independent Petroleum Association; C. F. Roeser, Fort Worth; E. B. Reeser, Barnsdall Oil Corp., Tulsa; Ralph T. Zook, Bradford, Pa.; on marketing, H. N. Gallagher, president Consolidated Oil Corp.; B. L. Majewski of Illinois Petroleum Marketers Association.

Independents Name Committee

The following committee was named in behalf of independent organizations led by Jack Blalock of Marshall, Tex., which opposed price regulation:

F. W. Burford of Dallas; Joe Mahoney, El Dorado, Ark.; L. R. Patten, Shreveport, La.; T. L. Wynne, Athens, Tex.; R. E. Hines, Los Angeles; for marketing: F. C. Hart of New York and C. R. Starnes, Dallas, Tex.

Following adjournment of the hearings on Thursday by Deputy Administrator K. M. Simpson the code is now in hands of the recovery administration for review of the various suggestions on the code proposed by Administrator Johnson. No meetings will be held for one week, during which briefs will be received by the administrator. If other meetngs are to be held, four days' notice will be given. Under this program it is expected the administration will be ready to present a code within 10 days or two weeks, unless the general business of the administration in connection with other industries prevent oil being reached.

It is understood that Secretary of the Interior Ickes will review the final draft of the code when it has been completed by recovery officials now engaged in redrafting the agreement. As a suggested solution of the contention within the industry over price regulation, recovery administration officials are considering a proposal to fix a ratio between the prices of crude oil and refined products, requiring that as one moves up the other should advance to the same degree. The proposal has not been approved, but is under study. It would take the ratio between crude and refined prices in the 1923-1926 period and make this relationship permanent—on the basis that in that period the economic law of actual supply and actual demand was functioning most nearly normally in the oil business.

The statement of General Johnson, administrator, that the code submitted by him last week was "tentative," has been fully justified by the registering of scores of objections.

The administrator has sought to have the oil industry adopt its own code, with his approval of its terms, rather than force any particular policy upon them, but he has found that differences of interests within the industry will force him to become the administrator in fact and finally to make decisions that may not please everybody.

Lease and Agency Issue

The lease and agency contracts of which there are said to be from 150,000 to 200,000 in operation, will have the administrator's approval only when the Federal Trade Commission makes its report, showing whether such contracts constitute unfair trade practice. General Johnson has said he would be guided by the opinion of the commission.

Mr. Allred, attorney general of Texas, advised the administrator that the courts have determined heretofore that these practices, invoking Rules 1, 2, 3 and 4 with reference to furnishing and lending of equipment are not unfair trade practices but he acknowledged this was a highly controversial question. Mr. Allred said that irrespective of what the Federal Trade Commission should find it still might be embodied in a code.

There were many objectors to license and agency contracts who appealed to General Johnson to have them declared unfair trade practices whether or not the Federal Trade Commission approved or disapproved them but the administrator indicated that he would be guided by the opinion of the commission.

"I am hoping, perhaps I am unduly sanguine, that I will not have to make any descision that is not an agreement," he declared.

State Regulation

General Johnson made plain his views of the rights of states to regulate their oil industries and that the Federal Government would not through the code undertake to interfere with well defined state rights in that respect. It would be only when the oil leaves the state lines and goes into interstate commerce that the code would operate. This seemed to be good news to E. O. Thompson, railroad commissioner of Texas, who objected to the code in its declaration that if a state shall produce more oil than its quota calls for the excess shall not go into interstate commerce.

"The question whether a state shall deluge its neighbor states with oil to the demoralization of the industry in those neighboring states is a Federal question," said General Johnson. "Nobody is going to tell you how much oil you can produce in the state; somebody may tell you how much you shall ship outside of the state, and the Federal Government may tell you to stew in your own oil."

Again he told the Texas representatives: "If you cannot regulate your own oil, you can keep it within your own state."

General Johnson has made it plain that there would be no voting on amendments to the tentative code he had submitted to the industry. Suggestions for amendments could be submitted as recommendations, every one of which he would like to have the industry agree upon.

During the first conference on the administrator's tentative code he declared a 15-minute recess so that he might pay a visit to the White House, showing the intimate touch which he President is exercising over the making of the code.

No one seemed to make any favorable impression on the administration in arguing for a lowering of the wage scale as set forth in the administrator's code.

That the wage rate should be binding on filling stations was questioned by C. E. Arnott but the administrator declared it did cover such stations and he was not willing to open that question, as he regarded it as having been approved by the industry.

Storage and Imports

Wirt Franklin pleaded with the administrator to fix a limit for withdrawals of oil from storage and make them not to exceed 100,000 bbls. daily. He said the price of oil goes up or down to a certain extent with the withdrawals, especially when they exceed 200,000 bbls. daily.

General Johnson thought such a provision would take discretionary powers from the President.

J. R. Parten offered a new section to the code requesting the President after investigation, to limit imports of crude petroleum and its products to volumes bearing the same ratio as the estimated volume of domestic production.

"That is illegal," declared General Johnson, "the President cannot do that under the law; he has not any authority to limit imports except such authority as he derives from the National Recovery Act."

Mr. Parten said he was not speaking legally, but was pointing out it is very vital to the producers of crude oil in the United States, but General Johnson retorted that Mr. Parten was trying to set up a new rule in advance governing the President as to his limitation of imports.

"There is," he said, "a prescribed rule for the exercise of his power to limit imports in this act, and he could not consider a suggestion that is not in accord with the statutory rule."

The language of the administrator's code, said General Johnson, "is a formula that by itself does limit withdrawals

Central Proration Committee of California Oil Producers, July 18, 1933

Standing, left to right, Robert E. Allen, V. H. Wilhelm, J. H. Jenkins, Bruce Barkis, Warner Clark, A. H. Bell, Neal H. Anderson, William Reinhardt, R. R. McGuire, J. A. Bermingham, H. Paul Grimm, J. R. Pemberton. Seated, left to right, Joseph Jensen, H. F. Owen, R. A. Sperry, Ralph B. Lloyd, Jay U. Stair, R. A. Broomfield, W. S. Fisher, William H. Geis, Lawrence Vander Leck, Lawrence Kelly

from storage," and a long line of suggested amendments for the limitation to 100,000 bbls. daily resulted without any approval of them by the administrator.

When Mr. Parten suggested that he had a new section to "allow agreements between users of oil to limit such withdrawals," General Johnson said he would take that under consideration. These withdrawals, he said, are covered by the formula set forth in the code but if they wished to have an agreement "with the approval of the planning and control committee," he had no objection to that but he did not wish to go further than that.

Wirt Franklin wanted a provision controlling new oil pools, that is when a new discovery is made there should be no further drilling in that pool until plans for its development shall have been approved by the President.

"That is doing what I said I was not willing to submit this act to, and that is entering the states and doing the things that the state authority should do for itself," declared General Johnson.

Price Fixing Discussed

Price fixing came in for much support by its advocates, but that suggestion received no encouragement by General Johnson. Wirt Franklin was the chief spokesman for this policy.

"I will say," the administrator declared, "I believe that the variations in cost of production of petroleum are such that an average cost is not an applicable formula. I do not believe price fixing is possible in any commodity in which you have not established a control of production. If anybody can show me any case, covering a long period of time, where prices have been controlled without controlling production, I would like to know it."

Mr. Franklin said if the producers are to meet the added costs provided by the code for labor they must have a means to get the money to pay that labor.

"You will have it if you regulate production," retorted the administrator.

Mr. Franklin had another suggestion that was approved by General Johnson. He wished to have a provision forbidding any one to solicit or accept a price other than the price posted, and General Johnson said that was an omission in the making of the code and should be supplied.

Mr. Shadford urged that small refineries should be supplied with crude oil as they have been in the past or the National Recovery Act will become an instrument of economic murder.

General Johnson remarked that in limiting production somebody was bound to be squeezed.

Mr. Shadford wanted a new section providing that no refiner should use any process or method not available to all refineries.

General Johnson said the speaker wished to amend the Constitution and said, "there is nothing in this act that abrogates existing statutes such as the patent statute."

Mr. Kingsbury's View

President K. R. Kingsbury of the Standard Oil Co. of California told the administrator, when the organization section was under discussion, that to take six members from the industry was hardly representative as an administrative body for the oil industry as a whole, and he added:

"We believe also that the method of selection should be by election from the industry and not by appointment from the administration."

Other recommendations favored a larger and more representative planning and co-ordination committee.

Reeser Speaks for Stockholders

E. B. Reeser, president of the Barnsdall Corp., called attention to the failure to hear from stockholders affected by the code. Various associations, tank wagon stations, labor unions and every other phase of interest had been heard from.

"We have representatives in this room of perhaps 2,000,000 stockholders," said Mr. Reeser, "and it seems they are entitled to some consideration."

Finally given leave to discuss stockholders' interests, Mr. Reeser said while they were in accord with the act, "we must have some financial means to meet this condition.

"You have cast aside the idea of fixing a reasonable recovery cost for our products on the theory that supply and demand would regulate the price," declared Mr. Reeser. "You have evidence to show that the supply and demand cannot and never will make the price so long as the supply is backed up by an unlimited amount of potentials.

"Supply and demand, if it is real and natural, will make a natural market, but you cannot reach a remunerative price with the simple statement that the ordinary law of supply and demand will take care of it. The petroleum industry is entirely different from any other industry in that the figures show that the supply and demand is balanced, when as a matter of fact the supply is only subject to the opening of any number of spigots which will destroy that balance. And as long as that condition will exist, supply and demand will not bring us an adequate price.

"We have today a price that is driving into bankruptcy most of the oil companies in the country. And yet, we have no hope, as evidenced today, with a further reduction in the price of crude oil all over the Mid-Continent Field at the very moment we are talking about supply and demand."

General Johnson said he did not think it was proper to fix an arbitrary price if that could be done.

"Then so far as my company is concerned we cannot meet the conditions of the code," retorted Mr. Reeser.

Marketing Conditions

The marketing conditions of the code were objected to by Doctor Warbatz, representing the consumers'-advisory board, because, he said, the marketing section discriminated against a large class of consumers who should have economic advantage of making use of the co-operative principle in supplying themselves with oil products.

Frank P. Walsh, representing the Consolidated Oil Corp., said retail outlets of the oil industry, with over 675,000 employes, have no voice in this conference, to which statement Mr. Kemp, assistant to the administrator, objected.

"I am speaking on behalf of the industry, and notwithstanding what you say, I am speaking without objection on behalf of this one million twenty-five thousand men, when I say unless a provision is made primarily, and it is made a first charge upon the industry and is reflected in the prices which the oil is sold at the outlet, that your efforts will be futile," retorted Mr. Walsh.

Fixing a price on crude, he said, would add $300,000,000 to the purchasing power of employes and the industry would absorb more than 240,000 extra employes, and would allow the oil companies to remain solvent.

J. F. Faulkner, a marketer of Baltimore, Md., proved to be a persistent contender for the right to state his case although not a committee member. After Mr. Faulkner had been ordered to take his seat half a dozen times Walter C. Teagle, chairman of the advisory committee, appealed to the chair to permit Mr. Faulkner to proceed. Up to this time Deputy Kemp had suggested that he might call the guards and ask them to take Mr. Faulkner out of the room. There were cries from the assemblage "Let him talk." Mr. Faulkner quoted a statement by General Johnson to the effect that "any man can get a hearing and say what he has to say and he will get what everybody gets—a square deal." He wanted to know whether he was to get a square deal or a raw deal.

E. O. Thompson Talks

Ernest O. Thompson, railroad administrator of the State of Texas, said since July 6 some companies had paid 75 cents a barrel and others 50 cents for East Texas crude and the failure of the higher price to stick cost Texas $300,000 a day, or $9,000,000 a month. This was in face of the fact that "hot" oil running had been stopped entirely, and completely abandoned.

"Our experience is that we cut the allowable and the companies cut the price and the poor producer catches it from both sides," declared Mr. Thompson.

"If you are going to limit our production to market demand," said Mr. Thompson, "then, to be fair to our people, our producers and our state revenues, you should at the same time set a minimum price below which they cannot take our oil. You must pay something for the reduction which we are going to stand."

Harry Pennington said there was a group not represented on the committee of 23, this group being the landlords and royalty owners.

Ohio Governor Wires

Governor White of Ohio had his views presented in a telegram which Mr. Reeser read.

"The effective co-operation of the oil industry in the President's great effort to increase wages and employment, is obviously dependent upon its ability to secure sufficient income," said Governor White. "If a provision which prohibited the sale of oil and its products below cost were inserted in the code now being formulated, it would insure the success of the code. Without such a provision, in my opinion, the whole movement might fail. Touching the situation in Ohio, this will have an effect on the value of hundreds of small wells and the many thousands employed by the oil industry."

To which Mr. Reeser added: "A number of us feel that the same men that put a minimum price on a bushel of wheat can with equal propriety put a minimum price on crude oil."

Governor Murray Speaks

Governor W. H. Murray of Oklahoma said:

"I understand the rules already written to make no provision with reference to a minimum price for crude, but it does make provision for hours of labor and the price of labor. I make no distinction between governmental functions fixing the price of labor and the hours than in the cost of the product.

"I understand also that the Federal Government under these rules will allot to the several states the amount of oil that can enter interstate commerce, leaving to the states the question of who or when or what shall be shipped. That is tantamount to relegating to the states the equity of interstate commerce.

"If the Federal Government has the power to limit commerce, it also has the

(Continued on Page 32)

Secretary Ickes Amends 'Hot' Oil Ban, Designating Only Certain Districts

WASHINGTON, D. C., Aug. 7.—Secretary of the Interior Ickes has signed an order suspending the regulations pertaining to the transportation of hot oil except for an area within a 15-mile radius of Oklahoma City, Okla., and a specially defined area designated as the East Texas Field. The order follows:

Having determined that the enforcement of the executive orders of July 11 and July 14, 1933, prohibiting the transportation in interstate and foreign commerce of petroleum and the products thereof illegally produced or withdrawn from storage, does not require the complete application of the regulations prescribed July 15, as amended July 25, 1933, pursuant to such orders, except in certain regions, the operation of such regulations is hereby limited and extended as follows:

1. Regulation 6 is hereby suspended except in so far as it affects shipments of petroleum or its products from the East Texas and Oklahoma City areas, as hereinafter defined, when such petroleum has been produced in whole or in part in such areas or such products have been derived in whole or in part from petroleum produced therein.

2. The affidavits required by Regulation 6 shall be furnished in duplicate.

3. The first general proviso to Regulation 6 is hereby amended to read as follows:

Provided, however, that under this regulation, carriers outside of the state where such petroleum was produced may receive from other carriers for such transportation and may transport any petroleum without requiring such affidavits and shall not be subject to any liability or penalty for or on account of so receiving or transporting the same; provided further, that with respect to the products of petroleum any carrier or carriers may receive from other carriers for such transportation such products if the affidavit required for Class "B" shipments is furnished to the originating carrier and due endorsement of its receipt is stamped upon the shipping papers.

4. The last general proviso to Regulation 6 is hereby amended to read as follows:

Provided further, that the term "area where produced" as used in this regulation, for the East Texas and Oklahoma City Fields, respectively, shall include:

(a) For the East Texas Field, the counties of Upshur, Smith, Gregg, Cherokee, Rusk and Harrison in the State of Texas, and that portion of the State of Louisiana adjoining Harrison County which is included within the area described as follows (including boundary points named): Beginning at a point on the Louisiana-Texas state line opposite the northeast corner of Harrison County, Texas, east to Mooringsport on the Kansas City Southern Railway; thence southeast to Cash Point on the Texas & Pacific Railway Co.; thence east to Vanceville on the St. Louis Southwestern Railway Co.; thence southeast to Adner on the Louisiana & Arkansas Railway Co.; thence south to Bodcau on the Illinois Central Railroad; thence southwest to Curtis on the Louisiana Arkansas & Texas Railway Co.; thence southwest to Lucas on the Texas & Pacific Railway Co.; thence west to Forbing on the Kansas City Southern Railway; thence southwest to Keithville on the Southern Pacific Lines and the Texas & Pacific Railway Co.; thence northwest to the Southeastern corner of Harrison County at the Louisiana-Texas state line; and thence to the point of beginning.

(b) For the Oklahoma City Field, the area within a 15-mile radius of Oklahoma City, Okla.

5. Regulation 4 is hereby suspended except in states, fields or areas in which reports are required each month from producers of petroleum under a regulation or regulations issued by any board, commission, officer, or other duly authorized agency of the state acting under a state proration law.

6. Regulation 5 is hereby suspended except in so far as it affects purchasers, shippers and refiners of petroleum, where such petroleum is derived in whole or in part from the East Texas and Oklahoma City areas.

7. Regulation 7 is hereby suspended except in so far as it affects pipe lines or gathering systems serving the East Texas and Oklahoma City areas.

This order shall not affect any shipment in interstate or foreign commerce of petroleum or the products thereof, produced or withdrawn from storage in violation of state law or valid regulation issued thereunder, and the penalties prescribed by these regulations and the orders of July 11 and July 14, 1933, of the President of the United States issued pursuant to the authority vested in him by Section 9 (c) of the act of June 16, 1933, known as the "National Industrial Recovery Act," shall remain in full force and effect.

A. I. M. E. Stabilization Forum, Article No. 10: Property Rights, Public Interest in Oil and Gas

By JAMES O. LEWIS
Consulting Petroleum Engineer, Tulsa

As public interest is paramount, it is desirable to determine what kind of property rights in oil and gas will best serve the public. It is the public that will eventually decide questions of property rights through legislation, executive enforcement, court decisions, and public opinion. It must also be remembered that the oil producers are a small minority and the oil consumers are in overwhelming majority. It is the consumer's good that must ultimately prevail and, though it is our principle to safeguard the rights of minorities, the future course of the industry must be viewed from an outside rather than an inside point of view. The problem is to make our private interests in oil and gas to run as nearly parallel to public interest as may be. The question is what kind of property rights comes nearest to paralleling public interest?

Before considering this question, public interest in oil and gas should be defined. In a broad way the public is the consumer and his interests would best be served by the most abundant and dependable supply at the cheapest prices considered over a term of years. But we realize at once that the two requirements are in part contradictory. Adequate supply over a term of years cannot be obtained if prices are too low and we know that broadly speaking the higher the prices, the greater the incentive for finding, extracting, and saving the supplies of oil and gas with which nature endowed our country. We know that low prices induce wastes and will result in reducing the available supplies and eventually create a shortage. We know that over a term of years, periods of excessively low prices, must be repaid out of excessively high prices and that the public must eventually pay a higher average price. We know that we are dealing with a limited supply and that each barrel of oil extracted, each quantity of gas wasted, reduces our total by the same amount.

In spite of the lack of information and misinformation which often is the background of public thinking, the principle, that too low prices must necessarily be temporary and in the end are beneficial to none, is commonly recognized. In the end decisions will be made by legislators, courts, and enforcement officers, who generally will be better informed. But though agreement may readily be reached in principle, it will be far otherwise when attempt is made to agree quantitatively, to say at what prices will public interest be best served. Essentially it means a weighing of the present good against the future needs. The present is a tangible thing and the obvious answer is low prices for the consumer but to what extent should future supply be jeopardized thereby? We are dealing there with imponderables, for who knows what future needs are going to be, what future supplies will be available, or what substitutes for oil and gas may be found later?

Wastrel or Miser

We know there can be no exact determination between the certain needs of the present and the uncertain needs of the future, between present low prices and wastes, or higher prices and prolonged supply. At what point do we cease to be the wastrel and become the miser? We can only take a reasonably provident outlook and endeavor to guide the industry in that direction. And it is quite certain that everything that induces conservation, that makes it possible to stop wastes and increase extraction without undue increase in costs, that everything that reduces costs without undue increase in wastes, is in the public interest. In sum, whatever can be done towards guiding the industry toward conservation and lower costs will be in the public interest.

But besides being a consumer, the public has an interest in the industry as a creator of capital, an employer of labor, and a consumer of materials. Public interest will be served by letting an industry earn enough to pay fair wages and dividends on invested capital, and to leave a margin of capital gain sufficient for healthy growth but not in excess.

As an employer and consumer of materials, it may be argued that reduction of costs entails reduction in labor and materials, which is harmful to the public good. This is the old argument against progress that has been brought up countless times since we entered the machine age. The backtrack along this trail returns us to the handloom days from whence we started. It is trying to solve the problem of distribution by compelling wastes in production, for to use unnecessary material, labor, and capital is a waste just as real as letting gas blow to the air or leaving recoverable oil underground.

A Method of Approach

To those who have been in attendance at the oil code conference at Washington, it became apparent negotiations have not yet terminated successfully, because Government has attempted to impose additional burdens upon an already prostrate industry without creating conditions that would enable industry to carry those burdens. No doubt that condition will be corrected.

In articles 5 and 7 of this series, Mr. Lewis has described conditions that must be remedied before the oil industry can continue to carry its present burdens. At our request he now adds a third article to his two previous articles. This latest article represents a method of approach that must be utilized before stabilization can make progress in the oil industry. We are pleased to offer the third article from Mr. Lewis herewith.

EARL OLIVER.

There is such a thing as conservation of iron ore, coal, labor, and capital. Furthermore, the unnecessary high costs resulting from this policy would cause recoverable oil to be left underground. It may be necessary at times to put the brakes on production efficiency to allow time to solve distribution problems, but there is no reason why the oil industry should not be oriented in what we know to be the right direction and to press forward as fast as the sum of circumstances shows to be wise.

Public interest may be defined as a reasonable balance between conservation and recovery costs and what this balance should be must be gauged from the outlook of the time. It is therefore not an exact but a changeable thing influenced by changing knowledge, changing needs, and changing viewpoints.

Two Trails

To reach this goal we find that we are following two trails but both ultimately lead to the same place —unit operation of our oil and gas fields. A pool is a physical entity and it must be operated as an entity, if full advantage is to be taken of the opportunities for extracting and utilizing the most oil and gas at the least cost. Every attempt to cut the entity into pieces necessarily entails losses of oil and gas or unnecessary labor, material, finances, and other costs and expenses. The advantages of unit operation has been covered so many times it is unnecessary to enlarge it here.

What may be called the ponderables—largest supplies at lowest costs—appears all on the side of unit operation, but against them the opponents bring forth arguments whose weight is a matter of opinion rather than of demonstration. They contend that unit operation will tend to put control of all fields into the hands of the large companies, to induce monopolies and therefore unconscionable prices, to curb initiative and individualism, to do away with the training school of the forceful and resourceful individualists from whence comes our leadership.

These and other imponderables are to be balanced against the demonstrable gains that can be made in favor of public interest. It is left to others to argue fully their merit; arguments for and against being but briefly mentioned here that a prospect of each side be left in mind in considering the other phases of the subject matter to this article.

These human problems are no different from those confronting every industry in our progress from individual to collective efforts. It appears an essential of our mechanized age that we work in increasingly large groups, yet experience has shown that there remains places for the individualists. After the mail order houses, the department stores, and the chain stores had found their limits, there still remained numerous independents. There are places in the oil industry for the independents and they will always find them. They will acquire interest in units, they will form small units of their own, the old settled production will pass more and more into their hands.

As to monopolies, there will still be competition between pools and still be divergent interests in each unit that will press for greater output and there will still be the desire of the refining interests for cheaper crude so as to enlarge their markets. Moreover unitized pools can be regulated far easier than pools of divided ownership. It would be easier to keep supply and demand in balance, to prevent rapid fluctuation in supply and consequently disturbing variations in price, to keep the industry on the even keel that we have found by sad experience is desirable for our public welfare. It would appear that unit operation would go far to curb that destructive competition which we are finding is not to public interest and yet leave sufficient competition to prevent unconscionable profits and adequate means for regulation.

Age of Co-operation

Nor are all the imponderables on the side of the opponents of unit operation and the advocates of the rule of capture. This is essentially an age of co-operation, wherein the individual gets his share from collective efforts, but the rule of capture is for each to grab what he can regardless of others. It has been described even by its advocates as legalized piracy. It violates our conceptions of property rights and justice. A man owns nothing concrete and definite; his lease is a base from which to conduct offensive and defensive operations against his neighbors; to grab what he can while he can, to prevent others from grabbing. It induces sharp practices, and it concentrates efforts on immediate ends to the neglect of the future; it provides little opportunity for conservation, efficiency, and business-like methods.

Despite all the fine sounding phrases about the forceful and resourceful individualism developed under the rule of capture, it may well be argued that it is essentially against public morals, anti-social, and opposed to the emphasis of our times on team work.

At the other extreme from unit operation is unregulated capture—the legal basis of property rights heretofore. Under this theory of law, the operator could draw as much of the oil and gas to his wells as he was able no matter whence it came, how much harm might be done his neighbors, or what loss of recoverable oil and gas was occasioned. In recent years this right of capture has been restricted to some extent for purposes of conservation. This has been done by legislation and executive rule under the police power of the state and justified by the public interest. The destructive effects of the rule of capture have been recounted so many times it is unnecessary to enlarge on it here. It has resulted

in overdrilling, extravagent haste, tremendous waste of gas and oil aboveground, low recovery of oil and gas underground, and temporary floods of flush oil that cause abandonment of older properties and the building of expensive and wasteful storage. The net result has been low conservation and high average costs. Public interest has been illy served under the rule of capture.

So long as we remain in ignorance of the full extent of these wastes and of methods for improvement, the rule of capture was accepted without comment, but as we became aware of its evils and the unnecessity of it, efforts have been made towards regulating capture. These regulations, primarily justified as measures of conservation, have been in the direction of unit operation, that is the utilization of the reservoir energy towards greatest recovery from the pool and holding gas back to prevent surface waste, both regardless of property interests. There is no doubt but what we should go much further toward conservation and hence toward unitization, to serve the public interest.

Compensation

So far there has been no compensation for infringement of property rights. Using unregulated capture as the basis of property rights, these regulations have resulted in less recovery from some properties with corresponding gains to others—in other words, it has taken from one to give to another, and the courts have held this is justified by reason of the extent of public interest in the natural resources, although the total recoveries have been reduced thereby. But how much further can we go in this direction and transgress private rights without restitution?

The degree of regulation needed and the losses and gains of property owners is a matter of specific conditions. In some pools reasonably effective conservation can be had without serious impairment of private rights, but in others, notably gas cap pools, it would be necessary to obliterate the rights of some properties otherwise there would be very serious losses of oil and gas and increase of costs. If we were to carry public interests in conservation and low costs to its finality along this route, the property rights would consist merely of the right to drill on each property only such wells as were needed and to take therefrom only such amounts of oil and gas as would result in the greatest total recovery and lowest total cost of the pool as a whole. In effect the state would completely supervise the development and operation of the pool and supersede all private rights. For some operators their property would become valueless, for others tremendously more valuable. It would be unit operation without equitable distribution of the benefits.

At some point it would appear that the courts will recognize private rights and require that they be satisfied and it is likely this point will be reached so far this side of what is desirable in the public interest, that we will not be satisfied to stop our progress toward conservation. To satisfy private rights and at the same time to further conservation, we could unitize the pools or work out a system of divided ownership with compensation. It may be assumed this compensation will be between the individuals in the pool, the beneficiaries being assessed and corresponding restitution being made to the loosers, assuming also there are legal means for effecting such adjustments.

Valuing Equities

Both methods would involve valuing equities. The simpler of the two would be unitization. If this could be done prior to discovery or early after discovery, voluntary agreements could often be reached, in fact have been reached in many cases, but there will at times be instances where some property owners will not or perhaps cannot for lack of proper title or other causes, come into agreement. If we are to solve the problem through unitization, it will be necessary to provide for compulsion and valuation of equities to be reviewed by the courts. This may not be insuperable when completed before more than one or two wells had been drilled but it is very doubtful if reasonably satisfactory means could be found after the fields had been opened up.

To determine the comparative values of properties where the equities arise from the rule of capture would be an endeavor to say how much oil and gas each property would have captured otherwise. It would not be a matter of how much recoverable oil and gas underlay each property but how much the property owner could have drawn to his wells. There would be no defined limits, claims for advantages of position would arouse so many factors of an opinionative nature, that it would make it almost hopeless to establish equities in the consolidation. These questions have arisen in Hobbs and other pools where voluntary unitization has been earnestly sought.

To an even greater extent these difficulties would be met in trying to operate a pool under divided ownership by adjustments for infringement of property rights. It would be necessary to say how much each operator would have drained from the common source of supply under unregulated competition and how much more or less he obtained in fact. There would be no definite property lines underground. There would hardly be a limit to what the operator could claim that he might have got by aggressive and efficient operations. There would be no proof or disproof. It would be an effort to value upon the basis of what might have been with the most important factors unknowable. It is difficult to conceive how these problems could ever be solved so that such control would be enforceable.

Correlative Rights

There has been in recent years a disposition within the industry and in the courts to get away from the rule of capture, to recognize correlative rights within the common source of supply and private rights to the oil and gas under each property. This latter principle of ownership could be reached in either of two ways—ownership in place or capture rights restricted to the recoverable oil and gas under each surface ownership. To the operator and engineer the effects would be the same. Such a system of private rights would not entirely parallel correlative good but it would be much better than unrestricted capture. It would greatly lessen the power for harm of an operator in the pool, but would not itself allow the gas energy to be directed so as to effect the maximum recovery of oil and utilization of gas. It would itself be a far step toward conservation and lower costs, therefore it would be in the direction of public interest.

It is believed the enforcement of this principle of property rights would alone go further towards conservation than could be reached under the capture rule without reaching the problems of compensation. From this advanced position, the state, through its police power, could go still further towards conservation without meeting the problems of compensation.

To transgress such private rights so as to effect still greater conservation would entail adjustments between property owners as under the rule of capture ownership. This phase of the problem has been dealt with in another article. The writer believes it will become possible to measure and to assess damages for it is a simpler problem than under the rule of capture, as the property lines would be definite. In particular it would be much simpler to value equities for unitization. There would not be the questions about advantages of position and other intangibles for each property owner rights would be limited to what underlay the surface.

Community Interest

Besides the two interests discussed, there is a third interest, the community interest in the common source of supply expressed as correlative rights. Mostly this interest coincides with public interest, the joint ownership will be interested in higher extraction and reduction of wastes and of costs, however, its primary interest will be in total profits. The selfish interest would cause it to reduce recovery somewhat and permit some wastes if by so doing it could reduce costs to the point that the total profits would be greater. It would also be disinclined to pass on all savings to the consumer but this would be true whether pools were unitized or operated under conservation regulations in divided ownership.

As a practical matter correlative rights are so nearly parallel to public interest that it would appear the differences in interest can be disregarded till we get much further along in conservation. They are, like many of the imponderables mentioned, bridges, the crossing of which may well be left till we get there. For the present we may adopt the view that anything in the correlative interest is likewise in the public interest.

It may be concluded that public interest lies in the direction of controlling a pool as a whole so as to curb wastes, increase recovery of oil and gas and reduce costs to the end that our supplies of oil and gas may be enlarged and prolonged and that the public be supplied at low prices. This is in the direction of unit operation and the kind of private property rights that will make the approach easiest to unitization will best serve public interest. There are two kinds of property rights—the rule of capture and the right to capture only what underlies the surface ownership.

The unregulated rule of capture is farthest from public interest nor does it seem possible to go much further in conservation without encountering what appears to be insurmountable difficulties in adjusting private rights to public interest. Furthermore the rule of capture offers great obstacles to unitizing pools. If we are to travel this route it is probable that we may shortly find we cannot go further in serving public interest without jumping to compulsory unitization before allowing a wildcat well to start. Even this would be difficult to accomplish because of the indefiniteness of property rights under the capture rule.

Ownership in place or capture restricted to surface ownership would itself go far towards conserving oil and gas and reducing costs. Unitization would be much simpler of accomplishment because of the more definite nature of ownership. It would also be easier to adjust private rights to public interests in furthering conservation under divided ownership. However, it will be necessary for the engineers to agree upon acceptable methods for enforcing such rights before they can be fully put into effect. If this is done it would be possible to make a closer approach to benefits of unit operation and still preserve divided ownerships.

For these reasons the writer believes that property rights in oil and gas corresponding to property lines more nearly parallels private to public interest than the present rule of capture and that our future course should be so oriented. Pending the time when we are prepared to go the whole way either to property rights corresponding to surface ownership or unit operation, proration plans and conservation regulations should go as far as present laws permit.

Washington Shuts Down Five California Wells

LOS ANGELES, Calif., Aug. 5.—Due to overproduction, five wells located on government leases in the Mount Poso Field of Kern County, have been shut in by the Department of the Interior. The order was delivered and enforced by C. L. Barton, a member of R. C. Patterson's staff. Two wells of the Pongratz Petroleum Co., located on the Tavis permit, were ordered shut in for 87 days due to an overproduction of 23,307 bbls. during July. Three wells of the Shell Oil Co. which overproduced 26,312 bbls. during the same period were ordered shut in for 63 days. Overproduction by the Pongratz Petroleum Co. on the Tavis permit forced the Shell Oil Co. to flow three offset wells wide open in order to prevent drainage. The Pongratz Petroleum Co. had a daily quota of 267 bbls. while the Shell had been assigned a maximum allowable of 399 bbls. per day from three wells. This is the first compulsory shut down of wells located on government leases due to overproduction resulting from the failure to observe the California proration program. It establishes a precedent for the future guidance of operators developing government acreage.

FRANCIS G. BELLAMY DIES

Francis G. Bellamy, 69, of Titusville, Pa., died at Titusville Hospital August 1 following an operation. Funeral services were held at Titusville. Mr. Bellamy was widely known in the marketing branch of the oil business in Pennsylvania. He is survived by his widow and daughter, Mrs. Charles S. Gresham, of St. Charles, Va.

VACUUM INCREASES PURCHASES

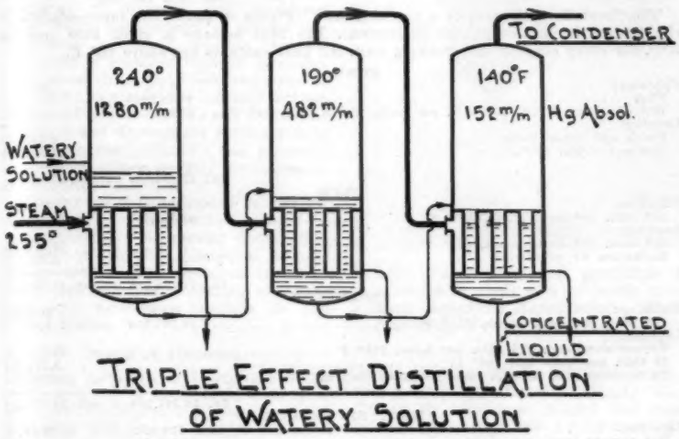
Producers of crude oil in the Allegany and Bradford Fields of Pennsylvania have been notified that the Vacuum Oil Co. will take 100 per cent of the oil called for in contracts. The Vacuum company operates a refinery at Olean, N. Y., which operates largely with Pennsylvania grade crude oil. It is understood that the increase in demand for industrial lubricants as well as motor oils accounts for the increased operations of the Vacuum refinery.

Thermodynamics and Heat Flow in the Typical Modern Skimming and Cracking Operation

By G. VANDENBERG

Although the process of re-employing stored heat is a rather old one, it seems that every day new applications of the idea can be put into effect, due to the fact that heat exchangers become more and more serviceable for higher temperatures. One of the early and very useful applications of the heat exchange principle was the triple and quadruple effect evaporator for distillation and concentration of watery solutions. The heating steam performs here a triple and quadruple duty, thus reducing the steam consumption to ca. one-third or one-fourth.

This is possible by transferring the material to be concentrated to consecutive vessels of lower pressure, in this manner reducing the boiling points and so enabling the overhead vapors of the first vessel to supply latent heat to the next one. Hausbrand and many other writers have pointed to the great possibilities of the multiple effects and at the present time there is hardly any chemical industry engaged in processing solutions that does not employ this type of steam saving evaporation. However, the temperature in these "steam stills" seldom exceeds 220° to 250° F.



TRIPLE EFFECT DISTILLATION OF WATERY SOLUTION

Temperatures up to 1,000° F. prevail in oil refining, accompanied by high cost of repair, resulting from corrosion or chemical destruction, causing the apparatus and that particular part of the plant to be shut down for several days. This and other reasons, as mechanical imperfection, inadequate material, unreliable operation, etc., have obstructed far-reaching application of heat exchange for high temperatures and high pressures.

Then there is the danger of injuring human beings when the more or less delicate heat exchangers do fail due to wear and corrosion.

Thermodynamics

Hot processed stock, if not cooled by heat exchange, must be brought back to normal temperature by coolers, usually with water or air as medium. We cannot pass upon the laws of thermodynamics, of which the first one expresses that the form of energy can be altered but not destroyed and the second one that energy (heat) always flows from a higher to a lower potential.

For a system in "operating equilibrium," the flow of heat may be expressed by the simple formula:

$$\text{Heat in} = \text{heat out} \qquad (1)$$

for any element of the process, as well as for the whole process, and for refinery installations means this:

$$\text{Heat produced from fuel} = \text{stack losses} + \text{other losses} + \text{heat to cooling water} \qquad (2)$$

For the two-stage distilling plant is this equation (see diagram):

$$F_1 + F_2 + \text{steam} = S_1 + S_2 + W \qquad (3)$$

For the cracking still (see diagram):

$$F = S + D + G + W \qquad (4)$$

A distillation process may be looked upon as a closed cycle, the origin being a liquid and the product a liquid, both of equal temperature. The heat required for evaporation and supplied by outer sources is nearly 100 per cent passed on to cooling water.

It is clear that the smaller the amount of heat absorbed by cooling water, by turning the heat back into the process through heat exchangers, the less heat will be required from the furnace. The smaller the furnace the smaller its stack and radiation losses and the smaller the investment.

The effect upon the fuel bill of dissipating heat by cooling water instead of by exchanging may be seen in the accompanying heat flow diagram for cracking still. The solid lines show the condition with heat exchange, while the dotted lines show the condition without.

Without the heat exchangers, 40 per cent more fuel would be necessary to do the same processing. To show the influence of heat exchange more clearly, a 15,000-bbl. per day two-stage distilling plant and a 2,000-bbl. per day cracking unit, both closely representing present-day practice, are arbitrarily projected.

The amounts of B.t.u.'s stored in the different process materials are grouped so as to produce a heat balance and calculated according to tables and data, laid down in "Thermal Properties of Petroleum Products," miscellaneous publication of the Bureau of Standards No. 97.

The tables are primarily arranged according to gravity and to temperature; not to pressure. Steam tables are usually arranged both to "pressure-temperature" and to "temperature-pressure." The tables in Bulletin No. 97 therefore are admittedly correct for pressures up to 45 pounds only. As much as the pressure is a function of the temperature, the correct interpolation of all data requires a little experience, special for very low and for very high pressures and more so in cases where the vapors are heated far above the boiling point.

In shell stills and similar apparatus, where the two phases, liquid and vapor, are in close touch with one another, the temperatures of both will be nearly alike. But in pipe stills where the outgoing vapors are separated from the liquid phase and subjected to heating through the coil the vapor may become highly superheated and a correct application and interpretation of the tables is then difficult. The pressure drop through the coil often amounts to 60 and 100 pounds in low pressure stills and from 300 to 600 pounds in high pressure stills. In the case of the low pressure still, heating of the oil may take place at 100 pounds vaporization from 90 to 60 pounds and lower, while the vapors when leaving in superheated condition are subjected to only 10 pounds pressure. However, the total amount involved is that of the vapor when it leaves the coils.

Therefore the reader must skilfully determine the boiling point for a certain oil, according to the known atmospheric boiling point, with the aid of pressure-temperature relation charts, of which the Cox chart is the most popular. Approximate boiling points or saturation temperatures (for the single flash evaporation) can roughly be assumed, according to Table 9 of Bulletin 97. Usually, the average boiling point of a mixture is a little above the 50 per cent "overpoint" of the Engler "differential" evaporation. In case the vapor is heated to, let us assume, 100° F. above this boiling point, then this must be regarded as superheat and calculated as such, analogous to steam superheat.

The method used in determining the amounts for the heat balances is as follows: For atmospheric pressures and up to 45 pounds, the heat content of a certain vapor is taken from Table 17 of Bulletin 97. For higher and for lower pressures the boiling point is determined according to the Cox chart and the heat content then determined with Tables 15 and 16.

For very high pressures, at or above the critical pressure, the latent heat of vaporization is zero and the heat content equals the sensible heat only, the amount of which can be derived from Table 16. At higher temperatures, "superheat" must be added. Assuming complete expansion to the vapor phase, at the critical pressure of ca. 350 pounds, a hydrocarbon mixture, heated to 1,000° F. will have a heat content of:

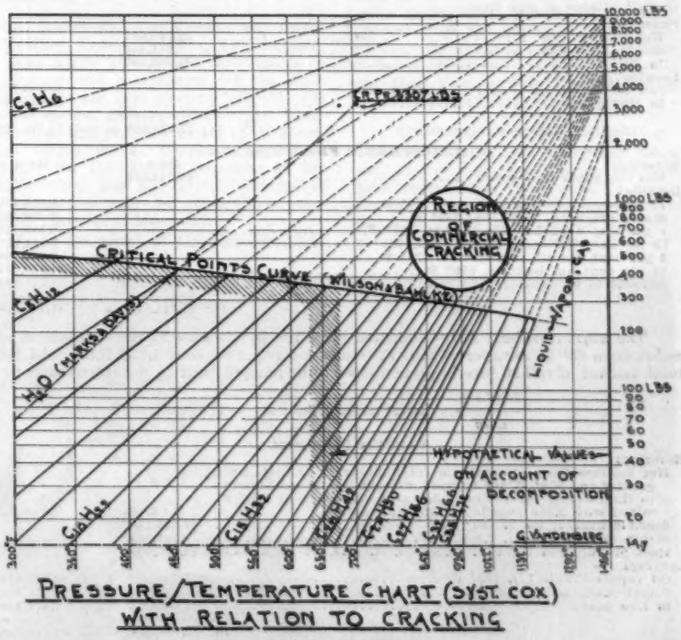
Heat content at critical point (ca. 800° F.) = sensible heat only.

Added for heating to 1,000° F. ..... = (1,000-800) × spec. heat

Total heat of vapor of 1,000° F. at critical pressure of 350 pounds.

Since practically all commercial cracking occurs above the critical points line (see the accompanying Cox chart, in which the author has introduced the critical curve, according to Wilson & Bahlke and the Van de Waals formula), it is apparent that for the calculation of the heat content, the above method should be followed.

Unfortunately, thermal properties in this region are not so well investigated. Only recently physical data for steam near the critical pressure are closer observed and put into reliable tables. Therefore we cannot expect that perfect data for hydrocarbons are available at this time, and probably never will be, due to the very complex nature. Calculations of heat content are therefore still mere approximations.


REGION OF COMMERCIAL CRACKING
CRITICAL POINTS CURVE (WILSON & BAHLKE)
LIQUID—VAPOR CURVE
HYPOTHETICAL VALUES ON ACCOUNT OF DECOMPOSITION
G. VANDENBERG

PRESSURE/TEMPERATURE CHART (SYST. COX) WITH RELATION TO CRACKING

When we examine a Mollier chart or the latest steam tables, we notice that steam at:

14.7 lbs. absol./213° F. contains 1,150 B.t.u.
420 lbs. absol./449° F. contains 1,203 B.t.u.*
3,200 lbs. absol./705° F. contains 900 B.t.u.†

*Maximum. †Critical.

Similar to this, a 25° A.P.I. oil, vaporized at the critical pressure of ca. 350 pounds and the temperature of 800° F. contains 3,502 B.t.u. per gallon (condensed), while the same oil, vaporized at

35 pounds and heated to 800° F. requires 3,827 B.t.u. (see Tables 16 and 17). It is obvious that a vapor at the critical temperature and pressure will partially return to the liquid phase as soon as the pressure is partially released, as the vapor in question contains less heat at the critical pressure of 350 pounds than at 35 pounds. This condition exists in a cracking plant, for instance, where cracked stock of 1,000 pounds pressure and 900° F. is released through a throttling device into an expansion drum or chamber of 100 pounds pressure.

Heat balances

The following heat balance tabulations give a detailed account of the quantities involved. The amounts are repeated in the heat flow diagrams.

TWO-STAGE DISTILLING PLANT, ATMOSPHERIC PIPE STILL
(All calculations above 60°)

Entering the heating coils:
15,000 bbls. per day, crude, 37.5° A.P.I.
300° F. entrance temperature.
36,250 gallons per hour.
1 gallon = 6.972 pounds.
183,015 pounds per hour.
The entering charge is preheated in exchangers up to 300° F.
It is assumed that 50 per cent will be vaporized and that 50 per cent will remain in the liquid state and that the outlet temperature will be 550° F. Furthermore, 2,000 pounds of low pressure steam will be superheated to 900° F. in a coil, specially built in for this purpose.
The heat added in the pipe still consists of:
183,015 pounds, absorbing sensible heat from 300° F. to 550° F.
Spec. heat at 550° F. = ... .694
Spec. heat at 300° = ... .571
1.265

	B.t.u.	B.t.u.
Average spec. heat = .632 B.t.u./°F./pounds (Table 12)		
183,015 × (550-300) × .632 =	.....	28,916,370
183,015 / 2 = 91,508 pounds absorbing latent heat of vaporization at ca. 80 B.t.u./lbs. (Table 15)		
91,508 × 80 =	.....	7,320,640
2,000 pounds of steam, heated from 250° F. to 900° F. spec. heat = .55		
2,000 × (900-250) × .55 =	.....	715,000
Fuel will be dry gas of 1,600 B.t.u. per cubic foot. Total amount to be burned, ca. 3,000 cu. ft. per hour.		
Total heat liberated: 30,000 × 1,600 =	48,000,000	.....
Leaving in flue gases	.....	11,047,990
	In: 48,000,000	— out: 48,000,000

Efficiency of furnace: (48,000,000 — 11,947,990) / 48,000,000 = .77

The above mentioned amount of sensible heat, 28,916,370 Bt.u. represents only the added sensible heat. The total sensible heat, above 60° F., includes:

	B.t.u.	B.t.u.
183, 015 × (.571 + .453)/2 × 300-60) =	22,532,500	.....

.571 and .453 being the spec. heat at 300° and 60° F.

Amount of heat flowing from pipe still to fractionator:		
Sensible heat at 300° F.	.....	22,532,500
Added sensible heat, to 550° F.	.....	28,916,370
Latent heat of vaporization	.....	7,320,640
In steam (above 60° F.), 2,000 lbs.	.....	2,260,000
In steam superheat	.....	715,000
Total	.....	61,744,510

Overall balance of pipe still:

Entering:		
Hot charge (300° F.)	22,532,500	.....
Steam 2,000 lbs.	2,260,000	.....
In fuel	48,000,000	.....
Leaving:		
Hot oil, vapor and steam to fractionator	.....	61,744,510
In flue gases	.....	11,047,990
	In: 72,792,500	— out: 72,792,500

ATMOSPHERIC FRACTIONATOR

Entering:	B.t.u.	B.t.u.
Hot oil, vapor and steam	61,744,510	.....
Leaving:		
30 per cent gasoline overhead, 240° F.	.....	10,385,000
Steam overhead, 2,000 lbs., 240° F.	.....	2,254,000
7 per cent naphtha, side stream, 300° F.	.....	1,510,425
10 per cent kerosene, side stream, 360° F.	.....	2,848,125
3 per cent gas oil, side stream, 425° F.	.....	1,159,200
50 per cent hot bottoms, 590° F.	.....	21,680,250
Amount to be dissipated by reflux	.....	21,907,510
	In: 61,744,510	— out: 61,744,510

The amount of heat to be dissipated by reflux is taken up by the evaporation of reflux from 60° F. to vapor of 240° F. One gallon requires about 1,320 B.t.u., and the total amount of reflux (overhead distillate) to be pumped back to the fractionator:

21,907,515 / 1,320 = 16,597 gallons per hour = 277 g.p.m.

VACUUM PIPE STILL

Entering:	B.t.u.	B.t.u.
Hot bottoms from atmospheric fractionator of ca. 24° A.P.I. gravity and 590° F. are pumped without loss of temperature to the coils of the vacuum pipe still and leave at 760° F., mixed with 2,000 pounds of superheat steam.		
Sensible heat of oil at 590° F.	21,680,250	.....
Steam (above 60° F.), 2,000 lbs.	2,260,000	.....
Heat produced in furnace: 18,000 cu. ft. at 1,400 B.t.u./cu.ft.	28,800,000	.....
Leaving:		
Oil vapors (Table 17), 760° F.	.....	42,783,330
Superheated steam, 760° F.	.....	2,877,000
In flue gases	.....	7,079,920
	In: 52,740,250	— out: 52,740,250

Efficiency of furnace: (28,800,000 — 7,079,930) / 28,800,000 = .75

VACUUM FRACTIONATOR

Incoming heat consists of:	B.t.u.	B.t.u.
91,508 pounds hydrocarbon vapors mixed with 2,000 pounds of steam at a temperature of 760° F.	45,660,330	.....
Outgoing heat consists of:		
4 per cent gas oil, overhead, 400° F.	.....	2,130,260
2,000 lbs. of steam, overhead, 400° F.	.....	2,480,000
22 per cent pressable wax, side stream, 430° F.	.....	8,898,123
4 per cent unpressable wax, side stream, 540° F.	.....	2,225,280
8 per cent cylinder stock, side stream, 650° F.	.....	4,979,300
9 per cent bottoms, 700° F.	.....	6,678,238
Dissipated by reflux	.....	17,268,639
1 per cent unaccounted for.		
	In: 45,660,330	— out: 45,660,330

Amount of reflux (overhead distillate) to be pumped back to vacuum fractionator:

17,268,639 / 1,922 = 8,682 gallons per hour = 145 g.p.m.

FLASHING TOWER

Entering:	B.t.u.	B.t.u.
9 per cent bottoms from vacuum fractionator at 700° F.	6,678,238	.....
Leaving:		
2 per cent cylinder stock, overhead at 675° F	.....	1,573,090
7 per cent flux oil bottoms, at 690° F.	.....	5,105,148
	In: 6,678,238	— out: 6,678,238

Overall Heat Balance

Repeating our formula (3) for overall balance:

$$F_1 + F_2 + \text{steam} = S_1 + S_2 + W_1 + W_2$$

and applying this to a regular balance:

Entering:	B.t.u.	B.t.u.
Heat produced in atmospheric pipe still	48,000,000	.....
Heat produced in vacuum pipe still	28,800,000	.....
Steam, 4,000 lbs. at 15 lbs. per sq. in.	4,520,000	.....
Leaving:		
Heat leaving in flue gases S_1	.....	11,047,990
Heat leaving in flue gases S_2	.....	7,079,920
Heat leaving in water, W_1, W_2	.....	63,192,090
Total in: 81,320,000	— out:	81,320,000

This heat balance includes only process steam; no steam for mechanical devices, such as pumps and jets, is entered, as the amount of steam used by these devices depends largely upon mechanical perfection and is not influenced by the process.

Cracking Still

The cracking still is projected for a throughput of 2,000 bbls. per day of 40° A.P.I. made-up charging stock and a circulation rate of 6,000 bbls. per day. It is assumed that the still yields:

85 per cent pressure distillate	=	1,100 bbls. per day	54° A.P.I.
30 per cent tar	=	600 bbls. per day	12° A.P.I.
12 per cent gas (noncondensable) } 3 per cent gas (unaccounted for)	=	300 bbls. per day	
100 per cent	=	2,000 bbls. per day	

The "heat flow diagram of a cracking still," Figure 4, shows the inner-relation of the process in thermodynamic dimensions. The heat balance is given here step by step, for every stage of the cracking unit. All heat contents are above 60° F.

FURNACE

Entering:	B.t.u.	B.t.u.
Fuel	24,962,000	.....
Hot charging stock, 250 bbls. per hour, 25° A.P.I., 580° F.	23,037,000	.....
Leaving:		
Stack and other losses	.....	6,240,500
Cracked stock, 900° F.	.....	41,758,500
	In: 47,999,000	— out: 47,999,000

DRUM

Entering:	B.t.u.	B.t.u.
250 bbls. per hour stock, 900° F.	41,758,500	.....
Leaving:		
250 bbls. per hour stock, 850° F.	.....	38,797,250
Radiation or otherwise	.....	2,961,250
	In: 41,758,500	— out: 41,758,500

SEPARATOR

Entering:	B.t.u.	B.t.u.
250 bbls. per hour stock, 850° F.	38,797,250	.....
Leaving:		
Vapors overhead, 225 bbls. per hour, 700° F.	.....	29,020,700
25 bbls. per hour tar, 700° F.	.....	3,112,200
To be dissipated by 53.5 bbls. per hour flux tar	.....	6,664,350
	In: 38,797,250	— out: 38,797,250

HEAT EXCHANGER

Entering:	B.t.u.	B.t.u.
Hot vapors from separator	29,020,700	.....
Preheated fresh feed, 83.33 bbls. per hour, 40° A.P.I., 350° F.	3,692,500	.....
Leaving:		
Vapors to fractionator, 610° F.	.....	25,377,200
Heated fresh feed, 580° F.	.....	7,336,000
	In: 32,713,200	— out: 32,713,200

FRACTIONATOR

Entering:	B.t.u.	B.t.u.
Vapors from exchanger, 610° F.	25,377,200	.....
Leaving:		
Vapors overhead, 425° F. 45.83 bbls. per hour P.D. vapor, 12.5 bbls. per hour gas	.....	4,757,900
Bottoms, 166.66 bbls. per hour, 580° F.	.....	15,701,000
To be dissipated by 60 bbls. per hour reflux	.....	4,918,300
	In: 25,377,200	— out: 25,377,200

EXCHANGER
(Partial condenser)

Entering:	B.t.u.	B.t.u.
Vapors from fractionator: distillate, gas, reflux, 425° F.	9,676,200	.....
Leaving:		
50 bbls. per hour distillate, 290° F. 83.33 bbls. per hour vapors, 290° F.	.....	5,983,700
Preheated fresh feed, 350° F.	.....	3,692,500
	In: 9,676,200	— out: 9,676,200

ACCUMULATOR

Entering:	B.t.u.	B.t.u.
166.66 bbls. per hour recirculating oil from fractionator, 580° F.	15,701,000	.....
83.33 bbls. per hour heated fresh feed, 580° F.	7,336,000	.....
Leaving:		
250 bbls. per hour stock to furnace	.....	23,037,000
	In: 23,037,000	— out: 23,037,000

CONDENSING AND COOLING COILS

Entering:	B.t.u.	B.t.u.
50 bbls. per hour distillate, 290° F.	5,983,700	.....
83.33 bbls. per hour vapors, 290° F.	9,776,550	.....
Tar from separator, 700° F.	.....	.....
12.5 bbls. per hour gas, including unaccounted for losses	.....	504,000
To cooling water	.....	15,256,250
	In: 15,760,250	— out: 15,760,250

Overall Balance

Applying the overall heat balance formula (4), as developed in the beginning of this treatise:

$$F = S + D + G + W \qquad (4)$$

Entering:		B.t.u.	B.t.u.
"F"	Fuel	24,962,000	.....
"S"	Stack losses	.....	6,240,500
"D"	Drum and radiation losses	.....	2,961,250
"G"	Gas and unaccounted for	.....	504,000
"W"	To cooling water	.....	15,256,250
		In: 24,962,000	— out: 24,962,000

(Continued on Page 42)

Oil-Field Equipment Manufacturers, Meeting in Dallas, Choose Officers and Adopt Code

By L. E. BREDBERG

DALLAS, Tex., Aug. 4.—Approximately 250 executives or representatives of oil field equipment manufacturing companies and sales and distributing companies completed two full days' work tonight when they voted to adopt a set of revised by-laws, a code for their industry, and elected a president, vice president and board of 20 directors.

The by-laws of the organization, which is to be known as the American Petroleum Equipment Suppliers Association, were adopted with but little change.

As set out in the by-laws, the object of the association is "To protect, promote, foster and advance the interests of the members, as manufacturers and distributors of oil supplies, material and machinery; to increase the use of their products; to improve the conditions under which the industry is carried on; to perfect machinery for the peaceful settlement of disputes between members, or between them and their employes or customers; to protect the industry against unfair and unjust burdens and exactions; to collect and disseminate pertinent data relating to the industry; and generally to do such things as may be necessary to the foregoing results."

Membership will be limited to any individual, firm or corporation engaged in the manufacture or regular distribution and sale of supplies, materials or machinery used in the production, transportation, refining and marketing of petroleum and petroleum products in the United States.

Board of Directors

Twenty members make up the board of directors, 10 of these being associated with the manufacturing group and 10 from the distributors and/or oil well supply group. The members are:

Eastern group: J. A. Geismar, National Supply Co., Toledo, Ohio; H. J. Lockhart, Parkersburg Rig & Reel Co., Parkersburg, W. Va.; Ben Harris, Oil Well Supply Co., Pittsburgh, Pa., and P. C. Jones of the S. M. Jones Co., Toledo, Ohio.

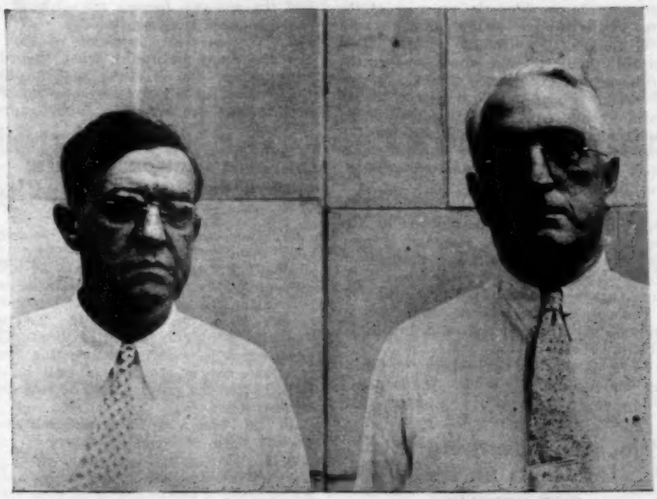
Mid-Continent group: W. J. Morris, Continental Supply Co., Dallas; J. L. Shakely, Frick-Reid Supply Corp., Tulsa; A. A. Buschow, Bridgeport Machine Co., Wichita, Kans.; A. A. Moody, Jarecki Manufacturing Co., St. Louis; Earl Miller, American Iron Works, Oklahoma City; Frank Bernsen, Lucey Products Co., Tulsa. Mr. Buschow headed the committee presenting the by-laws of the association.

Gulf Coast group: John T. Crotty of the Republic Supply Co., Houston; T. T. Word, T. T. Word Supply Co., Houston; Stanley P. Brown, Hughes Tool Co., Houston; Frank Carrothers, Norvell-Wilder Supply Co., Houston; B. Boykin, International Stacey Co., Beaumont.

West Coast group: Jack A. Crawford, Republic Supply Co., Los Angeles; W. A. Trout, Emsco Derrick & Equipment Co., Los Angeles; E. S. Dulin, Byron Jackson Co., Berkeley, Calif.; Lester Keim, Oil Well Supply Co., Los Angeles, and David Faulkner, Union Tool Co., Los Angeles.

The board of directors will choose a secretary and a treasurer for the association, at the first meeting following the organization meeting. Temporary headquarters will probably be set up in Houston where W. L. Childs of the Reed Roller Bit Co., elected president of the association, has his offices. Permanent headquarters may be changed to some other place at a later date.

J. A. Crawford of the Republic Supply Co., Los Angeles, was chosen vice president of the association. To Mr. Crawford went a vote of thanks for his work in drawing up the code for the association. The code was adopted by the association subject to necessary revisions to make it conform to President Roosevelt's views and to any changes recommended by counsel of the association and of the various companies joining the association. The code has to be signed by each member joining the association. Every member of the industry is eligible for membership in the code, "industry" meaning and including the business of manufacturing for or selling or furnishing to the petroleum and gas industry equipment or supplies or service.



Left, Percy C. Jones, president Jones Sucker Rod Co., Toledo, Ohio, permanent chairman of code meeting of American Petroleum Equipment Suppliers Association. Right, W. L. Childs, Reed Roller Bit Co., Houston, Texas, temporary chairman, and later chosen president of the new organization

Similar to Steel Code

The code is somewhat similar to the steel code, an allied industry, providing for an average of 40 hours per week over a six months' period, emergencies being considered in such a program so that no sales representative or other employe will be penalized or worked over time, according to the program. Executives or supervisory employes do not come within the 40-hour week limit. Outside sales, watchmen or gatetenders are also omitted under this article.

The article pertaining to wages limited the minimum wages to 40 cents per hour save for watchman or gatetenders, who shall be paid not less than $15 per week in any city over 500,000 population or its immediate trade area; $14.50 from 2,500 to 250,000 population and $12 in towns under 2,500 population, provided however, that the minimum rate of pay per hour for common labor may be fixed at the minimum rate of pay per hour in any district as of July 1, 1929, but in no case less than 30 cents per hour.

Condemns Unethical Methods

Selling supplies and equipment below cost, as has been done during the past three years when "cut-throat" competition has been hurting the industry, is also strenuously overruled by the code.

(Continued on Page 43)

Group representing 90 per cent of the manufacturers and distributors of oil-field and refinery equipment in the United States, in attendance at the code meeting held in Dallas, Texas, August 3-5

Many Interesting Production Papers Presented Before London World Petroleum Congress

A World Petroleum Congress organized by the Institution of Petroleum Technologists and held at the Imperial College of Science and Technology, South Kensington, London, England, July 11-25, was a marked success and many interesting and valuable papers upon all phases of petroleum industry technical problems were presented.

Such a mass of printed matter has been released from these meetings that it will be some time before any appreciable portion of it can be reprinted. It has therefore been decided to present herewith as many summaries of production papers as possible. Summaries of papers in geology and refining will be prepared for early issues of The Oil and Gas Journal.

In this manner it is hoped that many of the pertinent facts will be presented to our readers and as rapidly as possible full text of many of the papers presented at London will be reprinted in The Oil and Gas Journal.

Source of Energy Involved in Driving Oil to Well

By J. VERSLUYS

The paper deals with the origin of the sources of energy available in an oil field and the way in which they contribute to the propulsion of oil towards a well.

Owing to the action of gravity on the liquid filling the pores in the earth's crust, these liquids have a certain "potential" at each point in the formation, which varies with the co-ordinates. This potential at a point is the height to which the liquid tends to rise above an arbitrarily chosen horizontal plane of origin. As the motion of a liquid through a porous medium follows Darcy's law, the relation between the potential at a point and its co-ordinates is determined by Laplace's equation, and consequently Derichlet's principle applies.

From these considerations it is inferred that if there were gas-free oil in a field:

1. The oil would rise in a well to a level which is not far above or below the surface of the earth if the rate of production were zero.

2. That if oil were withdrawn at a constant rate, the pressure at the bottom would be decreased in proportion to this rate.

Therefore, the extraneous lifting work to be supplied per unit of volume of oil would be proportional to the rate of production. An amount of work equal to that supplied for lifting the oil is consumed in the formation and converted to heat. The above analysis concerns the phenomenon generally called production by water drive.

As a rule the subterranean oil contains dissolved gas. When the pressure is sufficiently diminished at the face of the oil-bearing formation in a well, gas is liberated from the oil. The total volume of oil and gas is greater than that of the oil alone, and consequently the liberation of gas expels oil with free and dissolved gas from the formation into the well. This phenomenon was called "depletion" in previous papers by the author. Most work is exerted by the gas at its liberation and its subsequent expansion; it is useless to venture an exact theory on how energy is imparted to the oil. It may be remarked here, although it is beyond the scope of this paper, that the gas is furthermore able to perform work in the well and thus supplies lifting energy and enables the operator to maintain a low pressure at the face of the sand.

In most cases production by depletion and by water drive start simultaneously. The zone where depletion takes place extends until it is recharged by water drive at the same rate as oil is supplied to the well. From a theoretical investigation of this dynamic equilibrium in a previous paper, the writer concluded that the rate of production of a well is then unfavorably influenced by the gas, i.e., without the gas the well would produce at a greater rate provided the pressure at the face of the sand were the same.

Gravity acting directly on the liquid within the depletion zone makes the drainage more complete. Another source of energy promoting the drainage is provided by intermolecular attraction, in as much as it causes a tendency for the water to displace the oil in the finest pores where it is least removed by mere washing out.

In water-drive fields the main importance of the gas is its assistance in lifting oil to the surface, although it may also cause some initial flush production. In the later life of the field, when edge-water reaches the depleted area, there is a tendency for the rate of production to decrease as the depleted zone has to be recharged with liquid.

In fields without water drive the drainage would be very complete if the direct action of gravity did not interfere.

Principles Governing Well Locations on Structures

By J. VERSLUYS

Invasion by oil of that portion of the structure which was originally occupied by gas has to be avoided as much as possible because only part of the oil that enters the gas cap can be recovered. For this reason care should be taken not to tap gas from gas cap in the first stage of the producing life of a field. When, however, pressure has dropped in the field on account of production, conservation of the gas in the gas cap need not be made a hard-and-fast rule.

Parts of the field which have been drained by depletion and by the direct action of gravity have yielded only a small percentage of their oil and more oil can still be recovered if water is admitted afterwards, preferably slowly.

The general motion causes the gas cap to expand and the edge water to encroach. Their edges advance the more regularly the more evenly the wells are distributed around the crest, as they are farther away from these edges, and produced more gently, and as their number is greater. The old practice of stepping out in a zigzag line on one side of a structure should be abandoned. The most favorable method of developing an oil field would be to drill one or two rows of wells on one or two contours in the oil, so that they should not be invaded too soon by edge water or by gas from the gas cap. Considered from a merely theoretical standpoint such wells should be drilled very closely and opened all at the same time, but for various reasons this is not commercially feasible. The structure should, therefore, be encircled with wells as soon as possible, so that it is better to space them widely in order to establish drainage within a short time on all sides with the available drilling strings. If necessary, intermediate wells on the same contours can be drilled later on.

As more oil can be set free from the sand when it is invaded by water than when it is depleted or invaded by gas, it may, in many cases, be tried whether it pays to recover the oil which remains in the sand updip of the original wells, after these wells have gone to water, i.e. by drilling crestal stripping wells.

There are fields in which the edge water encroaches so slowly as to be negligible, and such fields could be drained by wells on the periphery. When the limit of economic production of these wells is reached artificial flooding from the periphery and production through crestal walls may be profitable.

All measures to insure regular transgression of the edges of the edge water and the gas cap become more urgent as the structure becomes flatter.

In certain cases injection of gas at the crest may be useful, when the edge water pushes the oil to the crest, in order to prevent the oil from penetrating the original gas cap and from being trapped in secondary domes and noses.

Surface Tension, Specific Gravity of Oil in Place

By D. T. JONES

(Petroleum engineer, physical research), Anglo-Persian Oil Co., Persia.

In order that an oil field may be operated under the most favorable conditions, so that it will yield the greatest possible amount of oil, the control of the reservoir must be on highly scientific lines. The data which is required before this state of affairs can be realized can only be obtained after the execution of a great deal of research work.

In the Persian oil fields research work dealing with problems of reservoir control has for years been considered of vital importance. The recent inception of a program for the return of surplus products to the reservoir has given rise to the difficult problem of determining the effect of these products on final liquid recovery, and in order to provide a solution a close examination has been conducted of the specific gravities and the surface tensions of the crude and its surplus products under reservoir conditions.

These two physical properties were measured by an electro-magnetic balance designed specially for high pressure work. For the surface tension determinations, the pull of a film of the oil on a special glass frame suspended from the end of the balance beam was measured; the pull due to a film of a liquid of known surface tension having been measured, the surface tension of the oil could be calculated.

The specific gravity determinations were made by replacing the glass frame at the end of the balance beam by a bob of solid glass. This bob was immersed in the oil whose specific gravity was to be determined, and a measure of the force required to balance the beam obtained. A calibration curve has previously been drawn after a series of observations with liquids of known specific gravities, and from this curve the specific gravity of the oil could be directly read off.

Measurements were taken at 85°, 95° and 105° F., over a range of pressure extending from 500 pounds per square inch absolute to atmospheric. The results show that both the surface tension and the specific gravity increase as the pressure is lowered. In the case of the former the value at 500 pounds per square inch and 95° F. is 16.2 dynes per cm., and increases to 22.4 dynes per cm. at atmospheric pressure. The specific gravity over the same range, and at the same temperature, increases from 0.78 to 0.819.

Comparison of the results for Masjid-i-Sulaiman crude with some published values for American crudes suggests that the former crude has a lower surface tension. It is probable, however, that the American crudes had experienced considerable weathering before the experiments were carried out, and this factor would almost certainly increase the surface tension.

It is interesting to compare the surface tension of the crude oil with the surface tensions of distillates and residues obtained from it. The surface tension diminishes with the lighter fractions, and increases as the residues become heavier. It is of interest to note that the surface tension of the crude oil saturated to 500 pounds per square inch, is even less than that of 15 per cent distillate (single flash) at atmospheric pressure.

Curves drawn up to show the relation between the surface tension, or the specific gravity, and the number of volumes of gas in solution show that the influence of the solution of the lighter fractions of the gas at higher pressures is very marked. Thus, a reduction of the gas-content by 10 volumes at 400 pounds per square inch leads to an increase of 0.010 in the specific gravity, whilst the corresponding increase at pressures near atmospheric is about 0.005.

Rejuvenation of Oil Fields by Water Flooding Methods

By K. B. NOWELS

Chief petroleum engineer, Forest Oil Corp., Bradford, Pa.

At present there are three methods of rejuvenating oil fields; repressuring the oil sands with gas, air or with water. This paper describes the latter method, which is known as the "forced drive" or "water flooding system." There is only one place in the world where this method of rejuvenation is used on a large scale; that is, in the Bradford and Allegany Field of northwestern Pennsylvania and southwestern New York. Flooding has been responsible for the complete revival of the Bradford Field, which has been producing for 62 years. Out of a total of 85,000 acres, there remains 69,000 acres yet to be developed and produced by water flooding. This paper briefly traces the development of flooding since its beginning and describes present-day methods.

A discussion of development costs, equipment used, and a brief summary of existing viewpoints concerning some of the technical phases of this type of rejuvenation is given. Although recoveries from flooding operations have been small, compared with the recoveries obtained from natural production in other producing districts of the world, they are sufficient, nevertheless, to make flooding operations profitable. In the old, natural floods where hydrostatic pressure alone was used, the average recovery was approximately 3,960 bbls. per acre. Present day flooding involving the use of pump pressure to augment hydrostatic pressure gives recoveries of approximately 6,000 bbls. per acre on leases with which the writer is familiar.

The average flood well produces about 16 bbls. per day at its peak. Peak production is generally reached four and one-half months after the beginning of a flood, and the average well has a total life of approximately 30½ months. Wells closely spaced yield higher peak productions than widely spaced wells for any given pressure, and their productive life is shorter. Wider spaced wells, however, may be given the characteristics of closely spaced wells by means of increased pressure applied at the water intake wells.

There are two schools of thought concerning the shape of the flood zone between wells, and these points are briefly discussed in the paper.

It is the writer's opinion that eventually flooding will be found successful and economically practicable in the rejuvenation of other old oil fields, providing plentiful supplies of satisfactory water for flooding are available, and the producing sand is not too variable in permeability.

(Continued on Page 42)

Whether we have an oil industry "dictator" or not, nobody can dictate to automobile engines about gasoline—especially the new ones

They know what they want—it's anti-knock gasoline—they knock if they don't get it

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A Last Opportunity

The trouble at Washington is the wish to use government control on the other fellow.

Nothing could be further from the President's declared purpose that there should be as little government control as possible and that industries should govern themselves.

An industry which agrees on its own code, asking as little interference from government as possible, will retain management of its business while an industry which through disagreement surrenders control of its business to government may never recover it.

It would be an irreparable blunder if those who tried to use government control on others found government control riveted on the entire oil industry.

It is hard to see any other outcome unless the industry gets together. It is a cinch that if the recovery administration is forced to frame a code for the oil industry it will have many features that will be disagreeable to some.

This was shown in the tentative code put forward by General Johnson. No code is going to please everybody in the oil business but the question is whether the industry is likely to be more dissatisfied with a code it draws itself than with one forced on it by the government.

The notion that the government can be used to club some other fellow had better be abandoned because the same club may be used on all later.

The attitude that the points at issue cannot be settled within the industry and that they must be decided by a government agency which at best can have only a comparatively superficial knowledge of the oil business seems beyond common sense.

Any code the industry could agree upon, keeping management of its business to itself, must be infinitely more satisfactory than any code imposed by government and enforced by government control.

Blind prejudice, personal feeling, conflicting theories and methods of doing business should not infuriate controversy to the stage of cutting off one's nose to spite his face.

All the more so since the government has plainly said it does not want to take over business but simply wants business to agree upon an emergency policy to get us out of the depression.

This is the point that the red-hot controversialists at Washington have overlooked. The recovery act is an emergency measure just as the wartime petroleum board was an emergency measure.

As has been truly stated the present emergency is also a war, a war against social and economic perils even more dangerous than the issues in the world conflict itself.

It is not an agency for settling grudges or gaining advantage over others in the oil business. Primarily it is to widen employment and increase purchasing power in order to get the country out of the rut of depression. To accomplish these purposes in the oil business or any business there must be a standard of operations which will bring in the additional money needed to pay for them.

That standard, in the oil industry, requires first of all that production of crude oil and refined products be kept in line with demand.

But, instead, we see an increase in crude runs to stills which has resulted in a very undesirable condition in which the country as a whole added to total stocks of gasoline approximately a million barrels during the last two weeks of July.

Normally under healthy conditions there should have been withdrawals from stocks of a minimum of a million barrels a week at that season.

Refiners, however, are not wholly to blame since their action reflected conditions under which the current supply of crude exceeded the current demand. Not wishing to store crude many refiners were led to increase their refinery operations and as a result the industry faces another general collapse of its market unless it is held up by some satisfactory action on the code before the end of the month.

This would be particularly unfortunate because with the passing of the season of maximum consumption of gasoline and the ensuing decline in demand extending over the next six months it is imperative that the industry get its house in order to carry it over the fall and winter. In view of that situation it would seem incumbent upon the controversialist at Washington to heed the warning to "agree with thy adversary quickly."

When everything is said overproduction is the root of all the industry's other ills. If it can be stopped it should be a comparatively simple matter to reach agreement upon other points.

Restraining supply to demand will cut off the surplus which sought a market at any price and was the chief source of cut-price and unfair competition.

No durable market structure can be erected while that sort of undermining is going on. All other difficulties are secondary to this fundamental necessity because the industry cannot help itself or help the country's recovery until it is placed on a sound production basis.

The whole theory of the recovery act, greater employment and increased purchasing power, rests, in the last analysis, upon the elimination of unfair and unprofitable competition which in the case of the oil industry springs from overproduction.

Every business, every industry knows what unfair and unprofitable competitive practices it suffers from and their root causes. There can be no question that if these practices were cut out business and industry would enter upon a period of the greatest prosperity the country has ever known because they would be assured of protection against the chief cause of business losses.

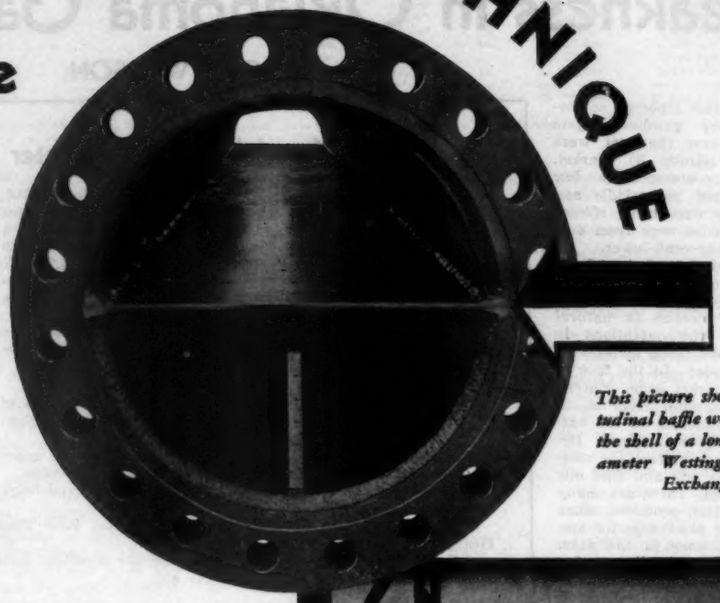
If this attempt falters, if recovery is retarded by cheating and controversy, what is there to expect? The country has been sold the principle of fair competition, on the exposure and elimination of business abuses which have prolonged the depression and delayed recovery.

The November election shows what happens when the people become tired of inaction.

For years The Oil and Gas Journal has been warning the oil industry that if it did not put its house in order the government would step in. President Roosevelt has given the industry a last opportunity to show it can govern itself.

If that opportunity is frittered away in controversy, in backbiting and recrimination instead of being seized for constructive effort the industry may live to regret it.

A NEW WELDING TECHNIQUE For Westinghouse Heat Exchangers *solves an old baffle problem*



This picture shows a longitudinal baffle welded inside the shell of a long, small-diameter Westinghouse Heat Exchanger.

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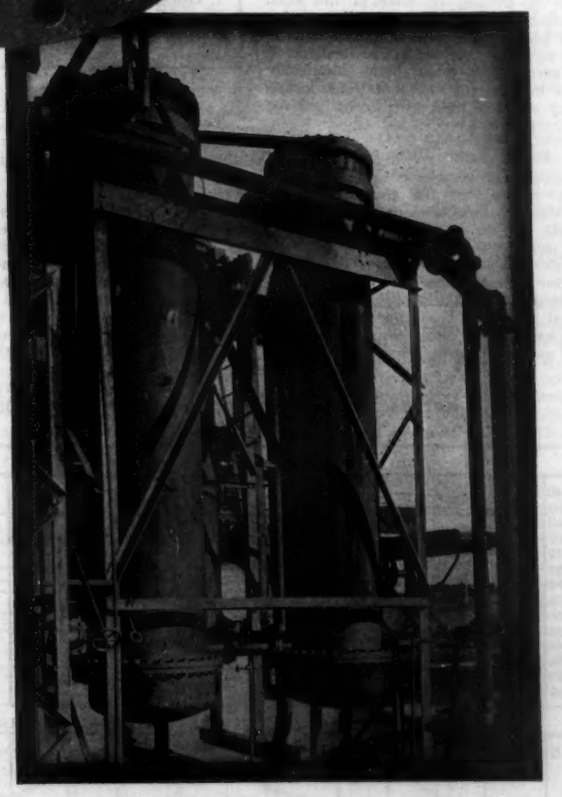

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Excessive Refinery Runs Reflected in Continued Weakness in Oklahoma Gasoline Markets

By C. O. WILLSON

With excess supplies reported at several points, refinery gasolines again pointed downward over the past week in the Oklahoma (Group 3) market. While the weakness centered in the low octane grade more of the middle and premium grades also were being offered and prices on all grades were from one-fourth to three-eighths cent lower.

Price changes in the remainder of the market were of minor importance. Scattered buying the latter part of last week prevented a general decline in natural gasoline prices and the quotations in effect a week ago were being maintained on Monday and Tuesday. In the face of the weak refinery market some concern was expressed by manufacturers as to how long present quotations on the natural gasoline could be maintained. Despite a weak kerosene situation the market on distillates, gas oils and fuel oils was firm in Oklahoma. There are many inquiries for the latter products, some of the buyers wishing to arrange for material to be shipped later in the year. Supplies appear limited and sellers so far have had little difficulty in maintaining firm prices. At the same time the demand for kerosene has not been sufficiently active to maintain firm quotations. Lubricating oils and wax were unchanged for the week.

Refined Market Barometer

With the exception of California the trend in refinery gasoline prices was downward over the past week. Many refiners have not reduced their prices for gasoline in the face of lower quotations offered by their competitors and will wait to see what final action is taken in regard to the industry's code now under consideration at Washington. Natural gasoline continued firm in the Mid-Continent and California. The demand for all grades of furnace oil distillates is improving. Kerosene was reported slow in several refining centers. Heavy fuel oils and gas oils generally firm. Lubricants firm. Higher prices for wax in two refining areas.

Mid-Continent—Refinery gasolines weak and prices lower. Natural gasolines steady. Kerosene slow. Steady demand for furnace oils, industrial fuels and gas oils. Lubricants unchanged.

East Coast—Gasoline market unsettled due to low priced material from Gulf Coast. Furnace oil firm. Export prices on wax higher. All grades of fuels and gas oils steady.

Chicago—Prices on refinery gasolines and kerosene generally lower due to slow spot demand. Industrial fuels and gas oils steady.

Pennsylvania—Active demand for fuel oil, wax and bright stocks. Gasoline and kerosene dull.

Gulf Coast—Gasoline market weak reflecting East Texas competition. Heavy fuels steady.

California—Refiners advance gasoline for domestic movement. Expect advance in fuel oil, distillate and gas oil.

Excess Crude Runs to Stills

Those who have made an extensive study recently of the gasoline market situation are in agreement that the main trouble lies in the excessive crude oil runs to stills over the past 30 to 60 days. So far as can be determined domestic gasoline consumption for the territory served by Mid-Continent refineries for several weeks has been approximately the same as last year despite the predictions made earlier in the year that declines in consumer demand ranging from 5 to 10 per cent were in prospect.

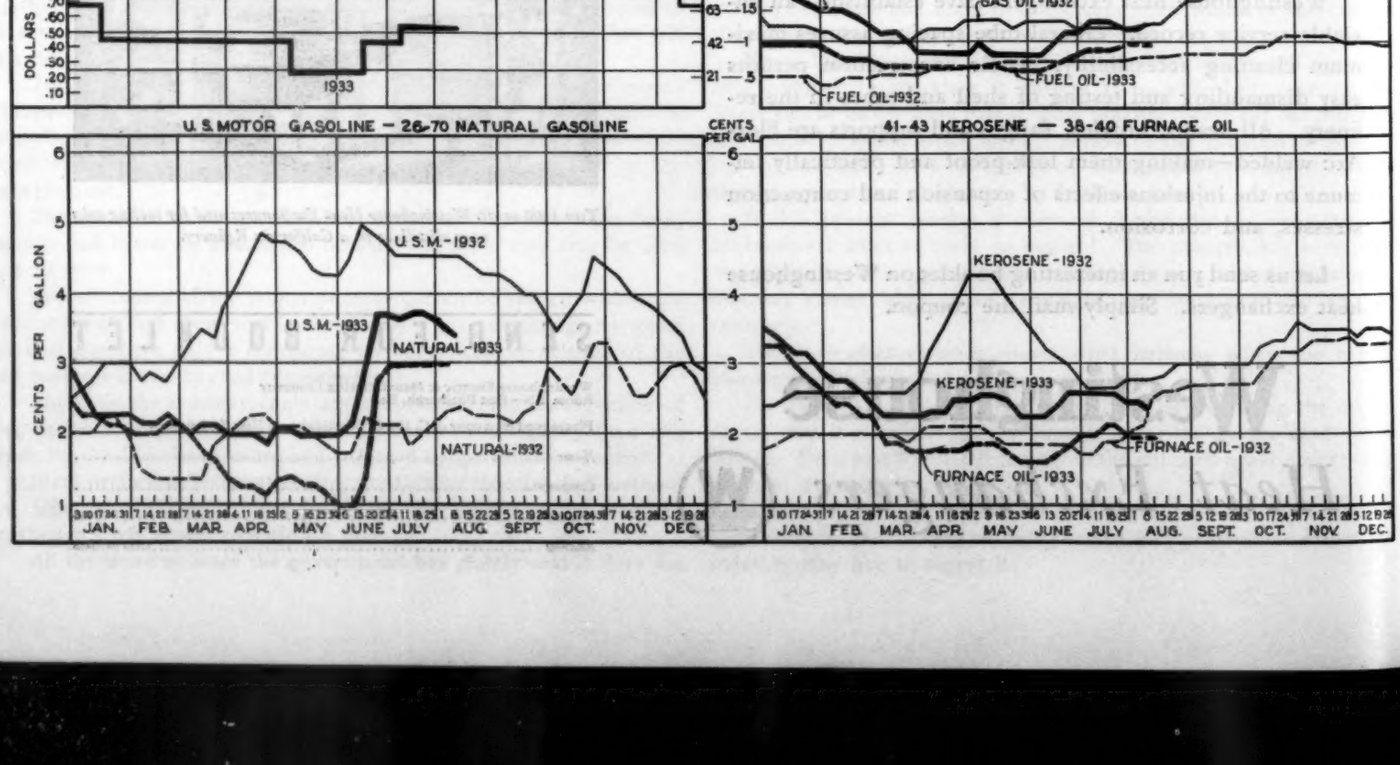
The trouble obviously lies in the well known inclination of refiners to nullify a favorable statistical situation by unduly expanding their plant operations during the summer months to take care of the seasonal increase in gasoline consumption. Faced with low prices, refiners as a group the latter part of last year and the first part of this year conducted their operations with the view of holding back inventory accumulations and comparative data show that much was accomplished. The recovery in prices in April and May no doubt was largely due to the fact that stocks were relatively low for the start of the main consuming season.

Recently this situation has not been so favorable. Operations were expanded rapidly the latter part of May and June and with the start of July the current output was about equal to the demand. In fact the last two weeks of July according to the weekly reports of the American Petroleum Institute the supply exceeded the demand so that the stocks at the end of the months were only slightly lower than the start. In a healthy market situation withdrawals from storage of from 3,000,000 to 5,000,000 bbls. during July would have materialized. Marketwise the net result has been a lack of that relationship between supply and demand which makes for firm or advancing prices. Many refiners are not only not withdrawing from storage but are in fact adding to their inventories at this time. Some have been holding up the usual liquidation of their gasoline stocks in the expectation that the adoption of a code for the oil industry would bring about a more favorable price situation by reducing the current output. The fact that governmental action has again been postponed was disappointing to many who are faced with the necessity of moving some gasoline quickly or shutting down their plants.

Data Reflect Expansion

In the accompanying table the daily crude runs to stills by districts for the first week of the year and the last week of July are given. While some increase in the crude runs to stills in July over January is to be expected an increase of 25 per cent as shown in the table is too great. It will be noted that the gains range from 6 per cent in Inland Texas to 68 per cent for the Rocky Mountain territory. It is probable that the data for Inland Texas do not reflect actual conditions. It is known that only a few of the more than 40 concerns and individuals operating refineries in East Texas report their operations either to the American Petroleum Institute or the Bureau of Mines. The large increase in crude runs to stills for that area since the first of the year for that reason is not shown. Some of the largest increases in crude runs to stills are found in Oklahoma-Kansas and Indiana and Illinois. The fact that these two important refining groups which are directly competitive have increased their crude runs to stills

Representative Mid-Continent Quotations on Crude Oil and Refined Products Basis Oklahoma (Group 3)



approximately 45 per cent since the first of the year may be the only explanation needed as to the cause of the present weak gasoline market in the Mid-Continent and Middle West. It is also worthy of note as shown in the tables headed "Weekly Refinery Report," that crude oil runs to stills of these two refining groups are substantially greater than a year ago although the demand for refinery products is approximately the same for the two periods under consideration. For the country as a whole this increase in crude runs to stills for this year compared to last started late in June and over the past month the increase over last year has been approximately 250,000 bbls. daily.

TABLE SHOWING INCREASE IN CRUDE RUNS TO STILLS AND GASOLINE STOCK SITUATION FIRST OF YEAR AND END OF JULY (Data in barrels)

	Daily crude oil runs to stills for week ending		Increase		Gasoline stocks at refineries only for week ending		Decrease	
Refining territory—	January 7	July 29	July 29	Pct.	January 7	July 29	July 29	Pct.
Oklahoma-Kansas	175,000	269,000	94,000	53	3,324,000	2,864,000	460,000	14
Inland Texas	94,000	100,000	6,000	6	1,269,000	1,086,000	183,000	14
North Louisiana-Arkansas	40,000	52,000	12,000	30	212,000	190,000	22,000	10
Total Mid-Continent†	309,000	421,000	112,000	36	4,805,000	4,140,000	665,000	14
Texas Coast	375,000	428,000	53,000	14	6,110,000	4,807,000	1,303,000	21
Louisiana Coast	75,000	121,000	46,000	61	1,202,000	1,159,000	43,000	3
East Coast	409,000	497,000	88,000	21	4,814,000	5,355,000	*541,000	*11
Appalachian	78,000	104,000	26,000	33	1,140,000	1,206,000	*66,000	*5
Indiana-Illinois	252,000	354,000	102,000	40	3,510,000	4,588,000	*1,078,000	*31
Rocky Mountains	22,000	37,000	15,000	68	1,111,000	1,016,000	95,000	8
California	413,000	462,000	49,000	12	12,701,000	6,550,000	6,121,000	48
Total United States	1,933,000	2,424,000	491,000	25	35,393,000	28,851,000	6,542,000	18

*Increase. †Composed of North Louisiana, Arkansas, Inland Texas, Oklahoma and Kansas.
Note.—Data based on weekly reports of the American Petroleum Institute.

The data on stocks as shown in the accompanying table also is illuminating. Practically all the decrease in gasoline stocks at refineries since the first of the year can be accounted for by the decline in California. California refiners have only increased their crude to stills 12 per cent since the first of the year and as a result their inventories were 48 per cent less at the end of July. In this connection, the California gasoline market for domestic movement has shown strength in recent weeks in the face of weakness in other territories.

Price Control

The developments of the past week at Washington, D. C., in regard to the oil industry's code which are explained elsewhere in this issue have been closely followed by the trade. Although there has been no official announcement to that effect a majority of the trade now feel that some form of price control for the oil industry will materialize as part of a code which is expected to become effective within a week or 10 days. A majority makes the additional assumption that this price fixing will result in substantially higher prices for crude oil, gasoline and many other refinery products and it is due to this fact that many refiners do not expect to change their present prices until it is known finally just what action will be taken at Washington.

Close students of petroleum economics frankly confess they become lost when they endeavor to follow through the probable ramifications of an industry dominated by price control established by the Government. They point out the wide variations in the refining value of crude oil based not only on differences in properties but also accessibility to markets and cost of production. In the refining end they point out that the value of crude oil to the refiner is not only dependent on physical yields but also the properties of the several products. For example straightrun gasoline from East Texas crude oil when properly fractionated has an exceptionally high octane rating while that from Oklahoma City crude is exceptionally low. On the other hand Oklahoma City crude is highly desirable in the production of cylinder stocks and other lubricants while East Texas crude is not. Both crudes have approximately the same gravity rating with Oklahoma City crude more easily available to northern markets. It is also pointed out that the cost of gasoline is partially dependent on the revenue received from other products. The returns from these so-called by-products vary widely in the several refining groups.

With these conditions in mind many are assuming if price fixing is adopted, that some rule of the thumb basis will be taken as a start in order to make possible the immediate application of the NRA code in the oil industry so that employment can be widened and buying power increased. Presumably this would mean a price fixing arrangement which would take care of those whose costs are higher than the average. Later a more equitable plan could be perfected according to those who favor the price fixing plan.

Gasoline and Naphtha

Low octane U. S. Motor was available from several sources in Oklahoma the first of the week at a low of 3⅛ cents and 60-62 400 endpoint at a low of 3¼ cents. These prices on Tuesday found competition as low as 2¾ cents for the U. S. Motor and 2⅞ cents for 400 endpoint in East Texas. Even these prices it was reported were being shaded in distress tank car shipments that arrived last week at Middle West points.

In the middle octane grade Oklahoma sellers generally were asking the trade a low of 3⅞ cents with a price range up to 4¾ cents and a low of 4¼ cents on the high octane. These prices also could be lowered in some of the competitive territories. The high gravity gasolines for which prices are largely nominal have been lowered along with the U. S. Motor and 60-62 400 endpoint grades. Buyers of 390, 375 and even 360 endpoint material who do not require an octane rating can make purchases in limited quantities at prices which are only one-eighth to one-fourth cent above the low octane U. S. Motor price. There is a fair demand for blending naphthas but prices are one-fourth cent lower than last week.

Kerosene and Distillate

The 41-43 water white kerosene in Oklahoma was quoted to the trade at a low of 2⅜ cents with a slow movement. As in the case of gasoline this price could be shaded in East Texas. Prices on distillate are being maintained. There is enough buying for storage purposes to absorb the bulk of the prime white and straw material available. Starting the last of the month contract shipments for the furnace oil season will be under way and this development is expected to stiffen the spot market provided a general collapse in crude price structure does not develop.

Fuel Oils and Gas Oils

All grades of fuel oils of medium or low cold test are firm in Oklahoma. There is some spot buying of all grades with many inquiries regarding supplies for later in the year. Industrial and cracking stock gas oils have advanced to a low of 1⅜ cents in Oklahoma.

The markets on bright stocks and steam refined stocks are unchanged. The demand for low cold test material is improving with a corresponding decline in outlets for the high cold test grades. Paraffin wax prices are firm at a low of 3 cents for the 124-126 grade.

DEFINE "ULTIMATE PURCHASER"

WASHINGTON, D. C., Aug. 8.—The Bureau of Internal Revenue has been requested to define "ultimate purchaser" as used in Section 621(d) 2 of the Revenue Act of 1932. The bureau says:

"It is held that the 'ultimate purchaser' is a person who purchases an article (1) for the consumption or (2) for use in the manufacture of other articles and not for resale in the form in which purchased.

"In order to obtain either a credit or refund of manufacturers' excise tax imposed under Title 4 of the Revenue Act of 1932, the provisions of Section 621(d) of the Revenue Act of 1932 and Article 71 of Regulations 46, as amended by Treasury Decision 4,358 (C.B. XI-2, 516), must be strictly complied with. No claim for credit or refund will be favorably considered which does not include, among other things, the sworn statement of the taxpayer that he has either repaid the amount of the tax to the ultimate purchaser of the article or has secured the written consent of such ultimate purchaser to the allowance of the credit or refund. In the latter case, the written consent of the ultimate purchaser must accompany the sworn statement."—C.E.K.

TEXAS LEGISLATIVE SESSION

AUSTIN, Tex., Aug. 7.—A special session of the Texas Legislature is to be called and measures submitted to make legal the participation of Texas corporations in regulations of the National Industrial Recovery Act. Gov. Miriam A. Ferguson has so notified Gen. Hugh S. Johnson.

American Petroleum Institute Weekly Refinery Statistics

Figures below reported for week by American Petroleum Institute. (1) Per cent refinery capacity represented. (2) Daily average crude runs to stills. (3) Total motor fuel stocks. (4) Gas oil and fuel oil stocks. All figures in 42-gallon barrels.

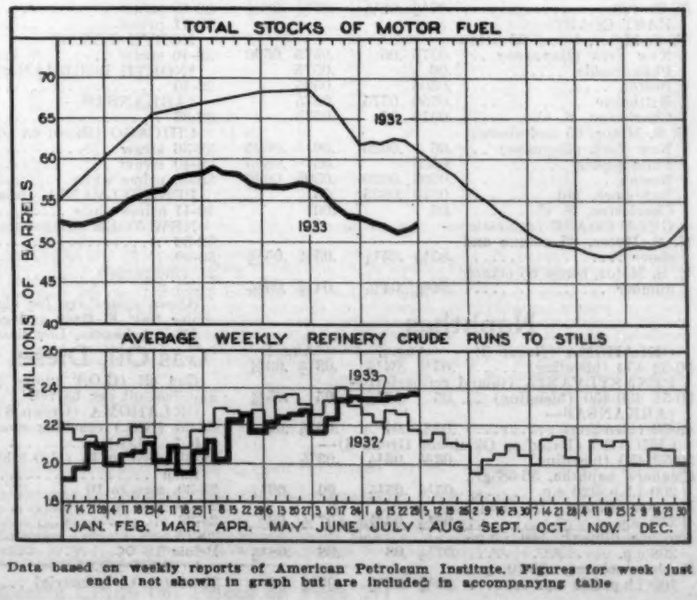
Week Ending August 5, 1933, Compared to Week Ago

	Week Ending August 5, 1933				Week ending July 29, 1933			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	488,000	14,781,000	8,340,000	100.0	497,000	15,158,000	7,871,000
Appalachian	92.6	96,000	2,042,000	835,000	92.6	104,000	2,069,000	806,000
Ind., Ill., Ky.	97.3	346,000	7,422,000	4,763,000	97.3	354,000	7,453,000	4,645,000
Okla., Kans., Mo.	82.1	265,000	4,792,000	3,870,000	82.1	269,000	4,640,000	3,833,000
Inland Texas	58.7	82,000	1,447,000	1,809,000	58.7	100,000	1,475,000	1,922,000
Texas Gulf	98.0	428,000	5,561,000	7,481,000	98.0	428,000	5,257,000	6,977,000
Louisiana Gulf	100.0	116,000	1,298,000	1,888,000	100.0	121,000	1,337,000	1,885,000
N. La. and Ark.	92.6	50,000	259,000	559,000	92.6	52,000	268,000	539,000
Rocky Mtn.	78.8	32,000	935,000	771,000	78.8	37,000	1,042,000	765,000
California	96.9	479,000	13,880,000	99,731,000	96.9	462,000	14,083,000	100,218,000
Total U. S.	92.2	2,382,000	52,467,000	130,047,000	92.2	2,424,000	52,732,000	129,461,000

Motor Fuel Stocks, Bureau of Mines basis, 54,470,000 bbls.

Week Ending August 5, 1933, Compared to Year Ago

	Week Ending August 5, 1933				Week Ending August 6, 1932			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	488,000	14,781,000	8,340,000	100.0	462,900	19,221,000	8,164,000
Appalachian	92.6	96,000	2,042,000	835,000	91.3	82,100	2,303,000	1,114,000
Ind., Ill., Ky.	97.3	346,000	7,422,000	4,763,000	98.9	273,900	8,095,000	4,357,000
Okla., Kans., Mo.	82.1	265,000	4,792,000	3,870,000	89.6	208,600	4,919,000	3,166,000
Inland Texas	58.7	82,000	1,447,000	1,809,000	76.5	100,100	1,557,000	2,467,000
Texas Gulf	98.0	428,000	5,561,000	7,481,000	99.8	370,700	4,799,000	8,715,000
Louisiana Gulf	100.0	116,000	1,298,000	1,888,000	100.0	102,900	1,782,000	4,530,000
N. La. and Ark.	92.6	50,000	259,000	559,000	97.0	41,400	194,000	633,000
Rocky Mtn.	78.8	32,000	935,000	771,000	89.4	32,900	1,903,000	579,000
California	96.9	479,000	13,880,000	99,731,000	96.7	446,100	15,378,000	99,282,000
Total U. S.	92.2	2,382,000	52,467,000	130,047,000	95.1	2,127,600	60,051,000	133,008,000



Data based on weekly reports of American Petroleum Institute. Figures for week just ended not shown in graph but are included in accompanying table

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement except as otherwise noted

EXCLUSIVE OF TAXES

The following quotations are exclusive of the Federal excise taxes of 1½ cents a gallon on gasoline and 4 cents on lubricating oils, which became effective June 17, 1933.

Refinery Gasolines

OKLAHOMA (Group 3)—	Aug. 8		Aug. 1	
*U. S. Motor grades:				
Regular	.037/8	.041/2	.041/4	.041/2
Premium	.041/4	.043/4	.045/8	.05
Third grade	.033/8	.033/8	.033/8	.04
60-62 400 grades:				
Regular	.04	.041/2	.043/4	.043/4
Premium	.041/2	.05	.045/8	.05
Third grade	.033/4	.033/8	.033/8	.04
64-66 390	.033/4	.041/4	.041/4	.041/2
64-66 375	.04	.041/4	.043/8	.043/4
68-70 350	.041/4	.043/4	.041/2	.05
NORTH TEXAS—				
U. S. Motor grades:				
Regular	.037/8	.041/4	.041/4	.041/2
Premium	.041/4	.043/4	.045/8	.05
Third grade	.033/8	.033/8	.033/8	.04
60-62 400	.033/4	.033/4	.033/8	.04
64-66 390	.033/4	.04	.037/8	.04
64-66 375	.04	.041/4	.041/4	.043/4
64-66 360	.041/4	.043/4	.041/8	.05
†NORTH LOUISIANA—				
U. S. Motor grades:				
Regular	.041/4	.041/2	.041/2	.043/4
Premium	.041/2	.043/4	.043/4	.05
Third grade	.033/4	.04	.04	.041/4
60-62 400	.04	.041/4	.041/4	.041/2
†ARKANSAS—				
U. S. Motor grades:				
Regular	.041/4	.041/2	.041/2	.043/4
Premium	.041/2	.043/4	.043/4	.05
Third grade	.033/4	.04	.04	.041/4
CHICAGO (Based on Oklahoma Group 3)—				
U. S. Motor grades:				
Regular	.033/4	.041/4	.041/4	.041/2
Premium	.041/2	.043/4	.041/2	.043/4
Third grade	.031/4	.031/2	.031/2	.04
60-62 400	.033/4	.033/8	.033/4	.04
64-66 375	.033/4	.033/4	.04	.041/4
68-70 360	.033/4	.04	.041/4	.041/2
Aviation fighting grade	.041/4	.043/4	.043/4	.05
PENNSYLVANIA (inland refineries)—				
U. S. Motor	.051/2	.053/4	.051/2	.053/4
60-62 400	.053/4	.053/4	.053/4	.053/4
64-66 375	.053/4	.06	.053/4	.06
68-70 350	.061/4		.061/4	
CALIFORNIA (domestic movement)—				
54-58 U. S. Motor	.063/4	.073/4	.061/2	.073/4
58-60 400	.073/4	.081/4	.071/4	.081/4
EAST COAST—				
U. S. Motor, below 65 octane:				
New York (Bayonne)	.0575	.06	.0575	.0590
Philadelphia	.06		.0575	
Boston	.0595		.0595	
Baltimore	.0550	.0575	.0575	
Charleston, S. C.	.0575	.06	.0575	
U. S. Motor, 65 and above:				
New York (Bayonne)	.06	.0625	.06	.0625
Philadelphia	.0625		.06	.0625
Boston	.0595	.0620	.0595	.0630
Baltimore, Md.	.0575	.0625	.06	
Charleston, S. C.	.06		.06	
GULF COAST (domestic)—				
U. S. Motor, 65 octane and above	.051/2	.053/4	.053/4	.051/2
U. S. Motor, below 65 octane number	.043/4	.047/8	.047/8	.053/8

***Octane Ratings**—The following octane ratings apply to the three grades of U. S. Motor gasoline: Regular 60-64 octane number; premium, 65 and above octane number; third grade, 59 and below octane number. Octane ratings determined by C.F.R. Motor Method.

†For Arkansas, Louisiana and Mississippi delivery.

Naphthas

OKLAHOMA (Group 3)—	Aug. 8		Aug. 1	
50-52 450 (blending)	.031/4	.031/2	.031/2	.033/4
PENNSYLVANIA (inland refineries)—				
50-54 430-450 (blending)	.05	.053/4	.05	.053/4
†ARKANSAS—				
48-50 (blending)	.033/4	.04	.033/8	.04
CHICAGO (Based on Oklahoma Group 3)—				
50-52 450 (blending)	.033/4	.033/2	.033/4	
Cleaners' naphtha, 50-58 gr., 200 i.b.p.-320 e.p.	.053/4	.053/2	.06	.061/4
Lacquer diluent, 180 i.b.p.-250 e.p.	.061/2	.063/4	.071/2	.08
Lacquer diluent, 140 i.b.p.-200 e.p.	.071/2	.08	.08	.081/2
Rubber solvent, 68-70 gr., 100 i.b.p.-300 e.p.	.053/4	.053/2	.053/4	.06
Stoddard solvent, 300 i.b.p.-410 e.p., over 83° flash	.043/4	.05	.053/2	.053/4
Pet. thinner, 290-300 i.b.p.-415 e.p., over 83° flash	.041/4	.041/2	.05	.053/4
V.M.&P. naphtha, 56-58 gr., 190-200 i.b.p.-330 e.p.	.05	.053/4	.053/4	.06
Petroleum spirits	.04	.041/4	.043/4	.05

Natural Gasolines

OKLAHOMA (Group 3)—	Aug. 8		Aug. 1	
Grade 18-55	.031/2		.031/2	
Grade 26-70	.03		.03	
Grade 30-70	.027/8		.027/8	
*Low pressure grades:				
15 lb. v.p. (max.)	.033/4	.04	.033/4	.04
11 lb. v.p. (max.)	.041/4	.041/2	.041/4	.041/2
NORTH TEXAS—				
Grade 18-55	.031/2		.031/2	
Grade 26-70	.03		.03	
Grade 30-70	.027/8		.027/8	
*Low pressure grades:				
15 lb. v.p. (max.)	.033/4	.04	.033/4	.04
11 lb. v.p. (max.)	.041/4	.041/2	.041/4	.041/2
NORTH LOUISIANA—				
Grade 26-70	.031/4	.031/2	.033/4	.031/2
CALIFORNIA—				
75-78 375	.051/4	.061/2	.051/4	.061/2

Kerosenes

(All kerosenes water white)

OKLAHOMA (Group 3)—	Aug. 8		Aug. 1	
41-43	.023/8	.025/8	.021/2	.023/4
42-44	.021/2	.023/4	.025/8	.027/8
NORTH TEXAS—				
40-41	.021/4	.021/2	.023/8	.021/2
41-43	.023/8	.021/2	.021/2	.025/8
†NORTH LOUISIANA—				
41-43	.023/4	.03	.023/8	.03
42-44	.03	.031/4	.03	.031/4
†ARKANSAS—				
41-43	.023/4	.03	.027/8	.03
PENNSYLVANIA (inland refineries)—				
45	.041/4	.043/8	.041/4	.043/8
46	.043/8	.041/2	.043/4	.041/2
47	.041/2	.043/4	.041/2	.043/4
CHICAGO (Based on Oklahoma Group 3)—				
41-43	.023/4	.025/8	.021/2	.023/4
42-44	.021/2	.023/4	.025/8	.025/8
*CALIFORNIA—				
38-40 high burning test	.04	.041/2	.04	.041/2
NEW YORK (Bayonne, N. J.)—				
41-43	.05	.051/4	.05	.051/4
GULF COAST (domestic)—				
41-43 water white	.04		.04	

*For Pacific Coast consumption.

†For Arkansas, Louisiana and Mississippi delivery.

Furnace Oils and Tractor Fuels

OKLAHOMA (Group 3)—	Aug. 8		Aug. 1	
32-36 straw	.02	.021/4	.02	.021/8
36-38 straw	.013/8	.017/8	.013/8	.02
38-40 straw	.017/8	.02	.017/8	.02
39-41 prime	.021/8	.021/4	.021/8	.021/4
NORTH TEXAS—				
38-40 straw	.013/4	.02	.017/8	.02
†NORTH LOUISIANA—				
36-40	.023/8	.021/2	.021/2	.023/4
†ARKANSAS—				
32-36	.023/8	.021/2	.021/2	
CHICAGO (Based on Oklahoma Group 3)—				
32-36 straw	.013/8	.02	.017/8	.02
38-40 straw	.02	.021/8	.02	.021/8
38-40 prime white	.021/8	.021/4	.021/8	.021/4
PENNSYLVANIA (inland refineries)—				
40-41 prime white	.033/4	.04	.033/4	.04
NEW YORK (Bayonne, N. J.)—				
32-36	.04		.04	
36-40	.05		.05	
21 (industrial)	.031/2		.031/2	

Above prices are for distillate oils of zero cold test under 190° F. flash and good odor.

†For Arkansas, Louisiana and Mississippi delivery.

Gas Oil, Diesel Oil and Fuel Oil

Gas oil (G.O.) quoted per gallon basis; Diesel oil and fuel oil per barrel.

OKLAHOMA (Group 3)—	Aug. 8		Aug. 1	
32-36 (G.O.) cracking stock	.011/4	.013/8	.011/4	.013/8
U.G.I. (G.O.)	.011/4	.013/8	.011/4	.013/8
32-36, zero to 15 (G.O.) high flash	.011/2	.013/4	.013/8	.013/4
28-30, zero to 10	.70	.75	.70	.75
26-30, zero to 10	.65	.70	.65	.70
24-26	.50	.55	.50	.55
20-22	.45	.50	.45	.50
Below 16	.40	.45	.40	.45
NORTH TEXAS—				
32-36 (G.O.) industrial	.011/4		.011/4	
22-26	.45	.50	.45	.50
Below 20	.40	.45	.40	.45
†NORTH LOUISIANA—				
32-36 (G.O.) zero	.021/2		.021/2	
14-16	.40	.45	.35	.40
†ARKANSAS—				
30-32 (G.O.) zero	.021/2		.021/2	
14-16	.40		.35	
CHICAGO (Based on Oklahoma Group 3)—				
32-36 (G.O.) industrial	.011/4	.013/8	.011/4	.013/8
28-30 (zero)	.70	.80	.70	.80
26-28 (zero)	.65	.75	.65	.75
22-26 (zero)	.60	.65	.60	.65
18-22 (zero)	.55	.60	.55	.60
Below 18	.40	.45	.40	.45

Note: Fuel oils of more than 40 cold test generally 5 to 15 cents per barrel less in all areas than shown in above tables.

†For Arkansas, Louisiana and Mississippi delivery.

PENNSYLVANIA (inland refineries)—				
36-40	.033/8		.033/8	
CALIFORNIA—				
30-34 (G.O.) per bbl.	.80	.90	.80	.90
27 plus Diesel	.80	.90	.80	.90
15-19 bunker (at tidewater)	.50	.60	.50	.60
15-19 (cargo lots)	.45	.55	.45	.55
15-19 (tank cars)	.42½	.50	.42½	.50
GULF COAST—				
28-30 (G.O.)	.03		.03	
28-30 Diesel	1.50		1.50	
Bunker C (bulk cargoes)	.60		.60	
Bunker C (bunkers)	.70		.70	
NEW YORK (Bayonne, N. J.)—				
28 plus (G.O.)	.04		.04	
*28-30 Diesel	1.75		1.75	
26-30 Diesel (tank cars)	.04		.04	
‡Bunker C	.80	.85	.80	.85

*Lighterage 6½ cents per barrel.

‡Contract price at New York Harbor to ocean-going steamships only.

Petroleum Coke*

Prices per ton f.o.b. refineries in Chicago area.

Breeze (screenings)	5.00	4.75
Still runs	6.00	5.75
Lump and egg	6.75 7.00	6.75

*Refineries will absorb freight to 80 cents a ton.

Neutral Oils

(Viscosity at 100° F. and color)

OKLAHOMA (Group 3)—	Aug. 8		Aug. 1	
Zero to 10 Cold Test:				
150-3	.071/4	.071/2	.071/4	.071/2
180-3	.081/4	.083/4	.081/2	.083/4
180-4	.083/4	.081/2	.083/4	.081/2
200-3	.09	.091/4	.09	.091/4
200-4	.083/4	.09	.083/4	.09
240-3	.11	.113/4	.11	.113/4
240-4	.103/4	.11	.103/4	.11
280-3	.12	.121/4	.12	.121/4
280-4	.111/2	.113/4	.111/2	.113/4
300-3½	.123/4	.13	.123/4	.13
350-3½	.133/4	.14	.133/4	.14
400-4	.143/4	.15	.143/4	.15
500-4½	.153/4	.16	.153/4	.16
100-2 paraffin oil	.051/4	.051/2	.051/4	.051/2
15-30 Cold Test:				
200-3	.081/4	.081/2	.081/4	.081/2
200-4	.08	.083/4	.08	.083/4
240-3	.101/4	.101/2	.101/4	.101/2
240-4	.10	.101/4	.10	.101/4
280-3	.111/4	.111/2	.111/4	.111/2
280-4	.11	.111/4	.11	.111/4
PENNSYLVANIA—				
150 vis., No. 3, 400-405:				
Zero pour test	.173/4	.181/4	.173/4	.181/4
10 pour test	.171/4	.173/4	.171/4	.173/4
15 pour test	.153/4	.16	.153/4	.16
25 pour test	.15	.151/4	.15	.151/4
180 vis., No. 3, 25 pour test	.161/2	.163/4	.161/2	.163/4
200 vis., No. 3:				
Zero pour test	.211/4	.211/2	.211/4	.211/2
10 pour test	.201/4	.201/2	.201/4	.201/2
15 pour test	.191/4	.191/2	.191/4	.191/2
25 pour test	.181/2	.183/4	.181/2	.183/4
GULF COAST—				
Pale Oils:				
100-2-2½	.041/2		.043/4	
200-3	.051/4	.051/2	.051/4	.051/2
300-3	.061/4	.061/2	.061/4	.061/2
500-3½	.081/2	.083/4	.081/2	.083/4
750-3½	.091/4	.093/4	.091/4	.093/4
1,200-3½	.10	.101/2	.10	.101/2
2,000-4	.11	.113/4	.11	.113/4
Red Oils:				
200-5-6	.043/4		.043/4	
300-5-6	.051/4	.051/2	.051/4	.051/2

500-5-6	.07¼	.07½	.07¼	.07½
750	.08¼	.08½	.08¼	.08½
1,200-5-6	.09	.09½	.09	.09½
2,000-6 plus	.10	.10¼	.10	.10¼
CALIFORNIA—				
Pale Oils:				
100-2½-3	.09	.09½	.09	.09½
200-2½-3	.09½	.10	.09½	.10
300-3-3½	.10½	.11	.10½	.11
350-3-4	.11	.11½	.11	.11½
400-3-4	.11½	.11¾	.11½	.11¾
450-3-4	.11¾	.12	.11¾	.12
550-3-4	.12	.12½	.12	.12½
Red Oils:				
200-4-5	.09½	.10	.09½	.10
300-5-6	.10½	.11	.10½	.11
350-5-6	.11	.11½	.11	.11½
400-5-6	.11½	.11¾	.11½	.11¾
450-5-6	.11¾	.12	.11¾	.12
500-5-6	.12	.12¼	.12	.12¼
600-5-6½	.12¼	.12½	.12¼	.12½
700-6½ plus	.12½	.12¾	.12½	.12¾
750-6½ plus	.12¾	.13	.12¾	.13
900-6½ plus	.13	.14½	.13	.14½

Bright and Steam Refined Stocks

OKLAHOMA (Group 3)—	Aug. 8		Aug. 1	
630 light green	.06¾	.07¼	.06¾	.07¼
600 light green S.R.	.06¼	.07¼	.06¼	.07¼
600 dark green S.R.	.04¾	.05¼	.04¾	.05¼
Bright Stocks:				
190-200 D	.23½	.24½	.23½	.24½
150-160 D, 0-10	.21¾		.21¾	
150-160 D, 10-25	.21¼		.21¼	
150-160 D, 25-40	.20¾		.20¾	
150-160 E	.19¾		.19¾	
PENNSYLVANIA—				
600 S.R.	.14¼		.14¼	
650 S.R.	.16½		.16½	
600 Pennsylvania flash	.17½		.17½	
650 D filtered	.22½		.22½	
600 E filtered	.18		.18	
Pennsylvania Grade bright stock:				
No. 8 color, 145-50 vis., at 210; 540-550 flash:				
10 pour test	.27½		.27½	
15 pour test	.25½		.25½	
25 pour test	.24½		.24½	

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—	Aug. 8		Aug. 1	
124-126 white crude scale	.03	.03⅛	.02⅞	.03
PENNSYLVANIA—				
122-124	.0310	.03125	.0310	.03125
124-126	.0315	.0330	.0315	.0330
NEW YORK HARBOR—				
120-122 (a.m.p. basis)	.0325		.0325	
125-127	.0355		.0355	
130-132	.0410		.0410	
133-135	.0475		.0475	
135-137	.0500		.0500	
Petrolatum in barrels in carload lots:				
Dark green	.01⅞		.01⅞	
Amber	.02		.02	
Extra amber	.02⅜		.02⅜	
Lily white	.05½		.05½	
Snow white	.0650		.0660	
Cream	.0450		.0450	
CHICAGO (f.o.b. switching district)*—				
122-124	.0390	.0400	.0365	.0375
125-127	.0415	.0425	.0390	.0400
127-129	.0430	.0440	.0405	.0415
130-132	.0490	.0500	.0465	.0475
132-134	.0515	.0525	.0490	.05

*Cents per pound on carlot orders in burlap bags of 225 lbs. approx.
Add 3° F. for a.m.p.

Export Prices

GASOLINE

GULF COAST—	Aug. 8	Aug. 1
U. S. Motor	.04¼	.04½
60-62 400	.0450	.04¾
61-63 390	.0450	.04¾
64-66 375	.04⅜ .04½	.04¾ .05
LOS ANGELES, CALIF.—		
U. S. Motor, 53-55 437 e.p.	.04 .04½	.04 .04½
U. S. Motor, 65 octane	.04½ .04¾	.04½ .04¾
U. S. Motor, 67 octane	.05	.05
U. S. Motor, 69 octane	.05¼	.05¼
58-60 400 endpoint gasoline	.04½ .05	.04½ .05

KEROSENE

GULF COAST—				
41-43 prime white	.04	.04¼	.04	.04¼
41 water white	.04¼	.04½	.04¼	.04½
LOS ANGELES, CALIF.—				
41-43 water white	.03¾	.04¼	.03¾	.04¼

LUBRICANTS

NEW YORK (f.a.s. in bbls.)—		
600 Warren E	.24	.24
600 S.R. unfiltered	.20¼	.20¼
650 S.R. unfiltered	.22½	.22½
600 flash S.R.	.23½	.23½
630 flash S.R.	.28½	.28½
Bright stock, No. 8 color	.30½	.30
Bright stock, No. 6½ color dil.	.29½	.29½

NEUTRALS

NEW YORK—Pale Engine Oil, Bulk (vis. at 100)—		
230-3¾	.10¾	.10¾
180-3¼	.10½	.10½
100-2¼	.06	.06
Red Engine Oil, Bulk (vis. at 100):		
300-6½	.10½	.10½
250-6	.09½	.09½
200-6	.08¾	.08¾

PARAFFIN WAX (Fully Refined)

NEW YORK (prices per pound)—		
123-125 a.m.p.	.0345	.0325
125-127 a.m.p.	.0350	.0340
130-132 a.m.p.	.04	.0390
133-135 a.m.p.	.04375	.0430
135-137 a.m.p.	.0475	.0460

Crude Oil Prices

Oklahoma, Kansas, North Central and East Central Texas

East Texas (see note) ..... $.50
Stratman, Kans. (July 17, 1933)† ..... .62
Corsicana (heavy) (June 17, 1933)* ..... .30
Other fields..... (See gravity table)

Effective June 17, Stanolind Crude oil Purchasing Co., 50 cents; June 19, Texas Co., Tide Water Oil Co., Humble Oil & Refining Co., Gulf Pipe Line Co.; August 1, Sinclair Prairie Oil Marketing Co., Empire Oil & Refining Co.; August 2, Magnolia Petroleum Co., Sun Oil Co.; August 3, Panola Pipe Line Co.

*Magnolia Petroleum Co. †Eldorado Refining Co.

West Texas

Crane, Upton, Crockett, Howard, Glasscock, Mitchell, Ector, Winkler and Pecos Counties (see note) .....
Lea County, N. Mex. (June 19, 1933) ..$.30
Toborg, Pecos County (June 20, 1933)*. .35
Jones and Fisher Counties..See gravity table

Note—Effective August 2, Magnolia Petroleum Co., 30 cents. Effective June 19, Texas Co., Gulf Pipe Line Co., Humble Oil & Refining Co., 30 cents. Lea County, effective June 19, Texas Co. and other purchasers, 30 cents.

*Shell Petroleum Corp.

Gulf Coast

Grade A and Grade B specifications discontinued by leading buyers .....
.....See gravity table
Tomball (June 19, 1933)* .....$ .65
Tomball (August 2, 1933)‡ ..... .65
Livingston (June 30, 1933)† ..... .50
Refugio light .....
.....(See gravity table) (Gulf Coast)*
Refugio heavy (June 19, 1933)* ..... .45
Markham and High Island .....
.....(See gravity table) (Gulf Coast)
Conroe.....(See gravity table)*

*Humble Oil & Refining Co., Markham by Texas Co., and High Island by Yount Lee Oil Co. †Shell Petroleum Corp. ‡Magnolia Petroleum Co.

South Central and Southwest Texas

Darst Creek (June 19, 1933).....See note
Mirando (June 19, 1933).....See note
Luling (Aug. 2, 1933) ..... $.35
Pettus (June 19, 1933) ..... .55
Salt Flat (June 19, 1933) ..... .40
Lytton Springs (Aug. 2, 1933) ..... .45
Duval County (June 22, 1933) ..... .40
Saxet (June 19, 1933) ..... .45

Note—Effective August 2, Magnolia Petroleum Co., 40 cents in Darst Creek and Mirando; Darst Creek, Gulf Pipe Line Co. and Humble Oil & Refining Co., 40 cents; effective June 22, Texas Co., Humble Oil & Refining Co., 40 cents. Pettus and Salt Flat by Humble and Gulf companies; Luling and Lytton Springs, by Magnolia Petroleum Co. Duval and Saxet, by Texas Co.

North Louisiana and Arkansas

Smackover, Ark. (all grades).....See note
Urania, La. (Jan. 30, 1933).....$ .35
East El Dorado, Ark. (June 19, 1933)..
.....See note
Other fields.....See gravity table

Note — Smackover, all grades, effective June 19 by Texas Co., 30 cents; June 19, Standard Oil Co. of Louisiana, 30 cents; June 20, Magnolia Petroleum Co., 30 cents; Gulf Refining Co., 30 cents; Louisiana Oil Refining Corp., 30 cents. Urania Field posted by Louisiana Oil Refining Co. and H. L. Hunt, Inc., East El Dorado, effective June 20, Magnolia Petroleum Co., 30 cents; Gulf Refining Co., 30 cents; Phil Tex Oil Co., effective June 19, posted 30 cents for all grades in Union and Ouachita Counties, Ark.

Eastern States

PENNZOIL CO.
(Effective July 26, 1933)

Pennsylvania Grade Oil in National Transit Lines:
Group A $1.92
Includes Cochran, Franklin, Hamilton and Doolittle districts.
Group B 1.91
Includes Titusville district.
Group C 1.90
Includes Turkey and Tidioute districts.
Group D 1.89
Includes Bear Creek and Porkey districts.
Group E 1.85
Includes Eldenau, Bull Creek, Rough Run, Carbon, Dipner, Bredin, McJunkin, Jameson, Kennerdell, Emlenton, Tiona, Lacy and Kinzua districts.
Price depends on length of pipe line haul to plant at Oil City.

SOUTH PENN OIL CO.
(Effective July 26, 1933)

Pennsylvania Grade Oil in National Transit Lines (Bradford Field) $2.00
Pennsylvania Grade Oil in Southwest Pennsylvania Lines 1.67
Penna Grade Oil in Eureka Pipe Line Lines 1.62
Penna Grade Oil in Buckeye Pipe Line Lines 1.47
Corning Grade Oil in Buckeye Pipe Line Co.'s lines (Aug. 4, 1933) ..... .85

(Continued on Page 33)

Crude Oil Gravity Table

	North Central and East Central Texas	Kansas, Oklahoma, North Central and East Central Texas	North Louisiana and Arkansas	Gray County Texas	Gray County Texas	Carson and Hutchinson Counties, Texas	Carson and Hutchinson Counties, Texas	Conroe, Texas	Salt Creek, Wyoming	Gulf Coast, Texas and Louisiana	Gulf Coast, Texas and Louisiana	Caddo, Louisiana	Homer, Louisiana	Haynesville, Louisiana	Sabine, De Soto, Bacorpita, Cartersville, Louisiana	El Dorado, Arkansas
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Below 20	....	....	....	....	....	....	....	....	....	$.33	$.32	....	....	....	....	....
20-20.9	....	....	....	....	....	....	....	....	....	.34	.34	....	....	....	....	....
21-21.9	....	....	....	....	....	....	....	....	....	.36	.36	....	....	....	....	....
22-22.9	....	....	....	....	....	....	....	....	....	.38	.38	....	....	....	....	....
23-23.9	....	....	....	....	....	....	....	....	....	.40	.40	....	....	....	....	....
24-24.9	....	....	....	....	....	....	....	....	....	.42	.42	....	....	....	....	....
Below 25	....	$.30	....	....	....	....	....	....	....	....	....	....	....	....	....	....
25-25.9	....	.33	....	....	....	....	....	....	....	.44	.44	....	....	....	....	....
26-26.9	....	.34	....	....	....	....	....	....	....	.46	.46	....	....	....	....	....
27-27.9	....	.36	....	....	....	....	....	....	....	.48	.48	....	....	....	....	....
28-28.9	....	.38	....	....	....	....	....	....	....	.50	.50	....	....	....	....	....
Below 29	$.28	....	$.28	....	....	....	....	....	....	$.38	....	....	$.26	$.32	$.29	$.35	$.37
29-29.9	.30	.40	.30	....	....	....	....	....	....	.40	.52	.52	.28	.34	.31	.37	.39
30-30.9	.32	.42	.32	$.30	....	$.26	....	....	....	.42	.54	.54	.30	.36	.33	.39	.41
31-31.9	.34	.44	.34	.32	....	.28	....	....	....	.44	.56	.56	.32	.38	.35	.41	.43
32-32.9	.36	.46	.36	.34	....	.24	....	....	....	.46	.58	.58	.34	.40	.37	.43	.45
33-33.9	.38	.48	.38	.36	....	.26	....	....	....	.48	.60	.57	.36	.42	.39	.45	.47
34-34.9	.40	.50	.40	.38	....	.28	....	....	....	.50	.62	.58	.38	.44	.41	.47	.49
Below 35	....	....	....	....	$.34	....	$.29	....	....	....	....	....	....	....	....	....	....
35-35.9	.42	.52	.42	.40	.36	.30	.31	$.59	.52	....	.59	.40	.44	.42	.49	.51
36-36.9	.44	.54	.44	.42	.38	.32	.33	.61	.54	....	.60	.42	.48	.46	.51	.53
37-37.9	.46	.56	.46	.44	.40	.34	.35	.63	.56	....	.61	.44	.50	.47	.53	.56
38-38.9	.48	.58	.48	.46	.42	.36	.37	.65	.58	....	.62	.46	.52	.49	.55	.57
39-39.9	.50	.60	.50	.48	.44	.38	.39	.67	.60	....	.63	.48	.54	.51	.57	.59
40 and over	.52	.62	.52	.50	.46	.40	.41	.69	.62	....	.64	.50	.56	.53	.59	.61

Column 1—Effective June 19, 1933, Humble Oil & Refining Co., Texas Co., Gulf Pipe Line Co. Effective August 1, Sinclair Prairie Oil Marketing Co.

Column 2—Effective July 6, Carter Oil Co. in Kansas and Oklahoma; Stanolind Crude Oil Purchasing Co. in Kansas, Oklahoma and North Central and East Central Texas; Tide Water Oil Co. in Oklahoma. July 8, Texas Co. in Oklahoma; Shell Petroleum Corp. in Kansas and Oklahoma; Mid-Continent Petroleum Corp., Rock Island Refining Co., H. F. Wilcox Oil & Gas Co., Champlin Refining Co., Bell Oil & Gas Co., Johnson Refining Co., Eason Oil Co., Deep Rock Oil Corp., Cushing Refining Co., Globe Refining Co., Yale Oil Corp., in Oklahoma. July 13, Gypsy Oil Co. in Kansas and Oklahoma. August 1, Sinclair Prairie Oil Marketing Co. in Kansas and Oklahoma; Empire Pipe Line Co. in Kansas and Oklahoma. August 2, Continental Oil Co. in Kansas, Oklahoma and North Texas; Skelly Oil Co. in Kansas; Phillex Oil Co. in Kansas and Oklahoma; Kanotex Refining Co. in Kansas; Barnsdall Refineries, Inc., in Oklahoma. August 2, Magnolia Petroleum Co. in Oklahoma, North Central Texas and East Central Texas; White Eagle Oil & Refining Co. in Kansas. August 1, Vickers Refining Co. in Kansas; Eldorado Refining Co. in Kansas. August 3, Pure Oil Co. in Oklahoma. August 1, Dickey Refining Co. in Kansas.

Column 3—Effective June 19, Texas Co., Gulf Refining Co., Louisiana Oil & Refining Co. Effective June 20, Magnolia Petroleum Co. Effective June 19, Stanolind Oil & Gas Co. in Pine Island district, Louisiana, and Marion County, Texas, posted below 39 gravity, 36 cents, with 2-cent spread upward to 40 gravity and over, 50 cents. For Standard Oil Co. of Louisiana prices see Columns 12 to 16.

Column 4—Effective August 2, Philtex Oil Co.

Column 5—Effective June 19, Humble Oil & Refining Co., Gulf Pipe Line Co. and Texas Co. August 1, Sinclair Prairie Oil Marketing Co. August 2, Magnolia Petroleum Co.

Column 6—Effective August 2, Philtex Oil Co.

Column 7—Effective June 19, Humble Oil & Refining Co., Gulf Refining Co. and Continental Oil Co. August 1, Sinclair Prairie Oil Marketing Co. August 2, Magnolia Petroleum Co.

Column 8—Effective June 19, Humble Oil & Refining Co. Effective June 22, Texas Co. and Tide Water Oil Co.

Column 9—Effective June 17, Stanolind Oil & Gas Co.

Column 10—Effective June 19, Sinclair Prairie Oil Marketing Co. Effective June 19, Humble Oil & Refining Co. and Gulf Pipe Line Co.

Column 11—Effective June 19, Texas Co. Effective June 20, Magnolia Petroleum Co. in Lockport, Louisiana, while in Cameron Meadows and Iowa, Louisiana, it posted below 20 gravity, 22 cents, with 2-cent differential upward to 34 and above at 52 cents.

Columns 12 to 16—Effective June 19, Standard Oil Co. of Louisiana.

(California Crude Oil Prices on Page 33)

TANK WAGON MARKETS

Quotations for gasoline and kerosene in United States, as furnished by the larger marketing concerns, include taxes

August 8, 1933

Taxes

The gasoline quotations given in the following tables include the 1½-cent Federal tax effective June 17, 1933, as well as state, county and city taxes. The gasoline quoted is the regular or standard grade. In most marketing areas a third or competitive grade is available at 1 or more cents per gallon under the service station price for the regular grade. Ethyl Gasolines are sold 2 cents above the service station price for the regular grade.

Southern District

STANDARD OIL CO (KENTUCKY)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax of	tank wagon
Atlanta, Ga.	22.0	22.0	7.5	10.0
Augusta	22.0	22.0	7.5	11.0
Macon	20.0	20.0	7.5	13 0
Savannah	22.0	22.0	7.5	14.0
Birm'ham, Ala.	24.0	24.0	8.5	13.0
Mobile	22.0	22 0	8.5	10.0
Montgomery	25.0	25.0	8.5	14.0
Jackson, Miss.	21.0	21.0	7.5	11.0
Vicksburg	20.0	20.0	7.5	11 0
Jack'ville, Fla.	21.0	21.0	8 5	12 5
Miami	22.0	22 0	8.5	13 5
Pensacola	19.0	19.0	8.5	13.5
Tampa	22.0	22.0	8.5	12.5
Lexington, Ky.	20.0	20.0	6.5	10.0
Covington	20.0	20.0	6.5	11.5
Louisville	19.0	19.0	6.5	10.0
Paducah	21.0	21.0	6.5	9.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city and county tax of 3 cents on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fortieth cent on gasoline. To Pensacola, Montgomery and Birmingham state taxes add 1-cent tax. To Mobile state tax add 1-cent city tax. Dealers receive discount of 2 cents off tank wagon price throughout territory.

Southwestern District

MAGNOLIA PETROLEUM CO.

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax of	tank wagon
Dallas, Tex.	15.0	17.5	5.5	7.5
Fort Worth	15.0	17.5	5.5	7.5
Houston	15.0	17.5	5.5	8.0
El Paso	15.0	18.0	5.5	8.0
San Antonio	15.5	18.0	5.5	8.0
Texarkana	*17.5	17.5	5.5	†11.0
Muskogee	15.0	17.0	5.5	7.0
Okla City	15.0	17.0	5.5	7.5
Tulsa	15.0	17.0	5.5	7.0
Ft. Smith, Ark.	‡17.9	17.9	5.5	†10.0
Little Rock	‡20.4	20.4	7.5	†10.0

*Less 2½ cents to dealers. †Less 2 cents to dealers. ‡Less 4½ cents to dealers.

Standard Oil Co. (Indiana)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax of	tank wagon
Chicago	15.6	15.6	4.5	8.5
Decatur, Ill.	16.2	16.2	4.5	9.2
E. St. Louis	15.5	15.5	4.5	8.5
Joliet	16.2	16.2	4.5	9.2
Peoria	16.2	16.2	4.5	9.2
Quincy	13.8	13.8	4.5	9.0
Davenport, Ia.	16.1	16.1	4.5	9.1
Des Moines	16.1	16.1	4.5	8.0
Mason City	16.1	16.1	4.5	9.1
Sioux City	15.7	15.7	4.5	8.7
Duluth, Minn.	16.7	16.7	4.5	9.4
Mankato	16.3	16.3	4.5	9.3
Minneapolis	16.4	16.4	4.5	9.4
LaCrosse, Wis.	17.8	17.8	5.3	9.8
Green Bay	17.2	17.2	5.5	9.2
Milwaukee	16.7	16.7	5.5	8.7
Madison	16.9	16.9	5.5	8.9
Detroit, Mich.	16.0	16.0	4.5	9.5
Grand Rapids	16.2	16.2	4.5	9.2
Saginaw	16.5	16.5	4.5	9.5
Evansville, Ind.	17.0	17.0	5.5	9.0
Indianapolis	17.2	17.2	5.5	9.2
South Bend	17.5	17.5	5.5	9.5
Fargo, N. Dak.	18.1	18.1	4.5	11.1
Huron, S. Dak.	18.4	18.4	5.5	10.4
Sioux Falls*	17.9	17.9	5.5	9.9
K. C., Mo.*	15.2	15.2	4.5	6.5
Springfield*	15.1	15.1	4.5	8.1
St. Louis	14.2	14.2	4.0	7.7
St. Joseph*	14.8	14.8	4.5	7.8
Wichita, Kans.	14.1	14 1	4 5	7 1
Bartlesville, Okla.	14.5	16 5	5 5	8 5

*State tax 2 cents, 1-cent city tax and 1-cent Federal tax.

Effective June 1, 1933—Discounts off tank wagon price to consumers on 500 gallons or more per month in territory outside of Chicago metropolitan area: 3 cents on Ethyl and Red Crown gasolines, and 1 cent on Stanolind gasoline. One-half cent additional discount in Chicago division.

Effective July 1, 1933—Discounts on resellers authorized agent's agreement made off the service station price throughout the territory as follows: 2.5 cents on Red Crown Ethyl and Standard Red Crown gasolines, and 1.5 cents on Stanolind gasoline. Half of reduction from normal service station price shall be absorbed by reseller up to maximum of 1 cent on all grades.

Stanolex Furnace Oil in Chicago

Effective June 27, 1933, prices f.o.b. Chicago, tank wagon prices: No. 1 (36-40 lt. stw. zero), under 100 gallons, 7¾ cents; No. 2 (30-34 stw. zero), 7¼ cents; No. 3 (22-26 zero), 6¾ cents; No. 4 (12-16 zero), 5¾ cents. Viscosity of No. 4, 90-115 at 100° F.; No. 5, 5½ cents; for deliveries of 100 gallons or more deduct 1 cent.

Naphtha

	Tank Wagon	Car
Oleum spirits	11.9	6.23
V.M.&P. naphtha	13.9	6.73
Cleaners' naphtha	13.9	9.23
Stanisol	13.9	9.23

Tank wagon prices f.o.b. Chicago, January 6, 1933. Each of above prices subject to discount of 1 cent per gallon for 150-gallon lots if covered by contracts.

Atlantic Coast District

(Effective June 28)

STANDARD OIL CO. (NEW JERSEY)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax of	tank wagon
Atl'tic City N.J.	17.7	18.7	4.5	11.2
Newark	17.0	18.0	4.5	8.5
Annapolis, Md.	18.3	19.3	5.5	9.0
Baltimore	17.8	18.8	5.5	8.0
Cumberland	19.3	20.3	5.5	11.7
Wash'g'n, D. C.	16.0	17.0	3.5	10.0
Danville, Va.	20.4	21.4	6.5	9.9
Norfolk	18.9	19.9	6.5	10.3
Petersburg	19.7	20.7	6.5	11.4
Richmond	19.3	20.3	6.5	10.7
Roanoke	20.5	21.5	6.5	11.0
Charls'n, W.Va.	18.7	19.7	5.5	11.6
Parkersburg	18.0	19.0	5.5	10.2
Wheeling	18.7	19.7	5.5	11.2
Charlotte, N. C.	22.1	22.1	7.5	12.5
Hickory	22.4	23.4	7.5	12.7
Mt. Airy	22.4	23.4	7.5	12.8
Raleigh	21.9	22.9	7.5	12.3
Salisbury	22.2	23.2	7.5	12.6
Charleston, S.C.	19.9	20.9	7.5	10.3
Columbia	21.7	22.7	7.5	12.2
Spartanburg	22.1	23.1	7.5	12.5

Note—Dealer contracts for gasoline are written at 2½ cents over the posted tank car price. The posted tank car price is the sum of the tax and 7.5 cents subtracted from service station price. A 2-cent discount allowed for cash at all service stations. Kerosene 1 cent off tank wagon for 25 gallons or more under contract except New Jersey and Baltimore, Md.

New York and Part of New England District

STANDARD OIL CO. (NEW YORK)*

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax of	tank wagon
Albany, N. Y.	17.7	18.7	4.5	9.0
New York	17.2	18.2	4.5	8.0
Buffalo	17.9	18.9	4.5	9.0
Rochester	18.0	19.0	4.5	9.0
Syracuse	18.0	19.0	4.5	9.5
Boston, Mass.	17.3	18.3	4.5	8.0
Augusta, Me.	18.7	19.7	5.5	9.0
Manch'tr, N. H.	19.4	20.4	5.5	8.0
Burlington, Vt.	20.0	21.0	5.5	8.5

*All service station prices subject to 2-cent discount for cash.

Central South District

STANDARD OIL CO. (LOUISIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax of	tank wagon
N. Orleans, La.	18.8	19.8	*7.5	†11.0
Baton Rouge	18.0	19.0	6.5	†10.0
Alexandria	18.9	19.9	*7.5	†8.5
Lafayette	19.1	20.1	*7.5	†10.0
Lake Charles	19.0	20.0	*7.5	†10.0
Shreveport	16.8	17.8	6.5	†11.0
Knoxville, Tenn.	22.7	23.7	8.5	12.5
Memphis	21.1	22.1	8.5	10.0
Chattanooga	22.4	23.4	8.5	10.0
Nashville	22.0	23.0	8.5	10.0
Bristol	22.6	23.6	8.5	13.0
Lt. Rock, Ark.	19.9	20.9	8.5	10.0

*Includes city tax of 1 cent. †Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

Effective June 2, 1933, station price fixed at 7 cents above basic tank car price at key refining points in territory. Discount to cash customers 2 cents off station price. Commercial consumers for tank wagon delivery pay following amounts over tank car price basis yearly deliveries:

1,000 to 75,000 gallons	2.5
75,000 to 300,000 gallons	1.5
Over 300,000 gallons	1.0

Pennsylvania-Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	16.0	17.0	4.5	9.0
Philadelphia	16.0	16.5	4.5	9.0
Scranton	16.0	17.0	4.5	9.0
Allentown	16.0	17.0	4.5	9.0
Altoona	16.0	17.0	4.5	9.0
Erie	16.0	17.0	4.5	9.0
Dover, Del.	16.0	17.0	4.5	9.0
Wilmington	16.0	17.0	4.5	9.0
Springf'd, Mass.	17.8	18.8	4.5	8.0
Worcester	17.7	18.7	4.5	8.0
Boston	17.2	18.2	4.5	8.0
Providence, R.I.	16.2	17.2	3.5	8.0
Hartford, Conn.	16.6	17.6	3.5	8.0
New Haven	16.4	17.4	3.5	8.0

On gasoline "split dealers," 2 cents off posted tank wagon price. To 100 per cent dealers, 2.5 cents. To authorized dealers (under lease 1 cent per gallon), 2.5 cents off posted service station price. Commercial accounts, under contract for one year, are sold at a discount off the posted prices, with due consideration to competition.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA*

	Gasoline			Kero.
	Tank truck†	Posted retail	Incl'ds tax of	tank wagon
Fresno, Calif.	17.5	20.0	4.5	14.0
San Francisco	17.0	19 5	4.5	12.5
Los Angeles	16.0	18.5	4.5	12.5
Reno, Nev.	20.5	23.0	5.5	15.5
Portland, Ore.	20.0	22.5	5.5	13.5
Seattle, Wash.	20.0	22.5	6.5	13.5
Tacoma	20.0	22.5	6.5	13.5
Spokane	23.0	25.5	6.5	18.0
Phoenix, Ariz.	17.5	20.0	6.5	‡16.0

*Retail prices posted by Standard Stations, Inc., a subsidiary.

†Above prices are at company's plant or depots as company does not operate stations. A 4-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 1 cent. ‡Includes 5-cent state tax.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax of	tank wagon
Denver, Colo.	17.0	19.0	5.5	11.5
Pueblo	17.0	19.0	5.5	13.0
Grand Jnctn.	19.0	21.0	5.5	13.0
Casper, Wyo.	18.0	20.0	5.5	10.5
Cheyenne	16.0	18.0	5.5	12.0
Butte, Mont.	21.5	23.5	5.5	17.5
Billings	21.0	23 0	6.5	16.0
Great Falls	23.0	25.0	6.5	17.5
Helena	23.0	25.0	6.5	17.5
Salt Lake, Utah	20.0	22.0	5.5	16.0
Albu'que, N. M.	18.5	21.0	*7.5	12.0
Boise, Idaho	23.0	25.0	6.5	18.0
Twin Falls	23.0	25.0	6.5	18.0

*One-cent city tax.

Effective June 1, 1933, dealers and lease and license accounts will receive 2½ cents discount on regular gasoline in Montana, Colorado, Wyoming, Utah and Idaho.

Ohio

STANDARD OIL CO. (OHIO)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax of	tank wagon
Ohio points	17.5	*20.5	5.5	†12.5

*Two-cent discount allowed for cash. †Includes state tax of 1 cent, effective July 22.

Nebraska

STANDARD OIL CO. (NEBRASKA)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax of	tank wagon
Omaha	16.8	17.8	5.5	9.8
McCook	18.3	19.3	5.5	9.0
Norfolk	17.3	18.3	6.5	10.3
N. Platte	18.3	19.3	5.5	11.0
Scottsbluff	18.3	19.3	5.5	10.0

Note: Discount to dealers and AAA commissions. From service station price: Red Crown Ethyl and Standard Red Crown Gasoline, 2½ cents. Reliance (third brand) gasoline, 1½ cents. Rentals under lease and agents agreement, one-half cent per gallon additional.

Discount to consumers under contracts (large consumers under contracts and governmental units): On tank wagon deliveries of gasoline on monthly purchases of 500 gallons, or yearly purchases of 6,000 gallons, from the service station price: Red Crown Ethyl and Standard Red Crown Gasoline, 2 cents per gallon; Reliance (third brand) gasoline, 1 cent per gallon.

Canada*

IMPERIAL OIL, LTD.

Imperial 3-Star Gasoline

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax of	tank wagon
†Hamilton, Ont.	25.0	26.0	6.0	16.0
†Toronto, Ont.	25.0	26.0	6.0	16.0
Brandon, Man.	29.5	33.0	7.0	21.0
Winnipeg, Man.	26.5	30.0	7.0	18.0
Regina, Sask.	29.5	33.5	6.0	22.0
Saskatoon, Sask.	31.5	35.5	6.0	24.0
Edmonton, Alta.	30.0	34.0	6.0	23.0
Calgary, Alta.	26 5	30.5	6.0	19.5
†Vanc'ver, B. C.	29.0	29.5	6.0	23.0
Montreal, Que.	22.5	25.5	6.0	15.5
St. Johns, N.B.	25.0	29.0	7.0	21.0
Halifax, N.S.	24.0	28.0	6.0	21.0

*Imperial gallon used in Canada. †Dealer discount posted tank wagon on gasoline in Ontario and British Columbia subject to dealer's discount of 2 cents per gallon.

TANK WAGON CHANGES

Continental Oil Co., effective August 1, advanced gasoline tank wagon and service station prices one-half cent due to city tax at Albuquerque, N. Mex. Price of 16 cents tank wagon and 18 cents service station became effective July 8 at Cheyenne, Wyo. and 12-cent price for kerosene became effective at same point on June 24.

Standard Oil Co. of Nebraska, effective July 27, reduced kerosene tank wagon price .8 cent at Scottsbluff, Neb.; effective August 1 reduced kerosene tank wagon price 2.3 cents at McCook, Neb.

Standard Oil Co. (Indiana), effective July 29, advanced gasoline tank wagon at Bartlesville, Okla., one-half cent; July 28 gasoline tank wagon and service station prices reduced 2 cents at Quincy, Ill.; all other Illinois prices advanced .2 cent due to occupational sales tax; effective July 26 Des Moines kerosene tank wagon price reduced from 9.1 to 8 cents; July 22 Kansas City kerosene tank wagon price reduced from 8.2 to 6.5 cents; effective July 28 tank wagon price of 11.9 cents for oleum spirits and 13.9 cents for V.M.&P. naphtha.

CRUDE OIL PRICE CHANGES

Following the example of the Sinclair Prairie Oil Marketing Co. in meeting the prices of the Carter Oil Co. in Kansas and Oklahoma effective August 1, all the purchasers in the two States who had been paying the Magnolia Petroleum Co.'s higher schedule came down to the Carter prices, and all companies in the two States including Magnolia are paying a top price of 62 cents for 40 gravity and over. In North Central Texas and East Central Texas there are two schedules of prices: Those of the Humble, Gulf, Sinclair Prairie and Texas companies with a top price of 52 cents for 40 gravity and over and the Stanolind, Magnolia and Continental companies, which pay the same in North Central and East Central Texas as they do in Kansas and Oklahoma, or 10 cents higher on every grade than the Humble, Gulf, Texas and Sinclair Prairie.

All companies are paying a flat price of 50 cents in East Texas and uniform prices are now being paid in Southwest Texas and West Texas.

In the Texas Panhandle the Phil Tex Oil Co. is paying higher prices than other companies in Gray County and Hutchinson, Carson and Moore Counties.

In the old Central West fields, Ohio Oil Co., effective August 1, posted Lima oil at 85 cents; Illinois at 77 cents; Princeton, Ind., at 77 cents, and western Kentucky at 72 cents.

Effective August 7, the Pure Oil Co. posted Midland, Mich., at 80 cents, a 10-cent decrease. Effective August 4, the South Penn Oil Co. cut Corning, Ohio, crude from 95 cents to 85 cents. The Stoll Oil Refining Co. reduced Hart County, Kentucky, crude 10 cents to a new price of 85 cents per barrel, and the Ashland Oil & Transportation Co. reduced Somerset, Ky., crude to 77 cents, an 11-cent cut.

CHICAGO WORLD'S FAIR EDITION

CIRCULATION 1,000,000

BIG NEWS

FIRST EDITION

Published by Sinclair Refining Company (Inc.), 45 Nassau Street, New York, N. Y.

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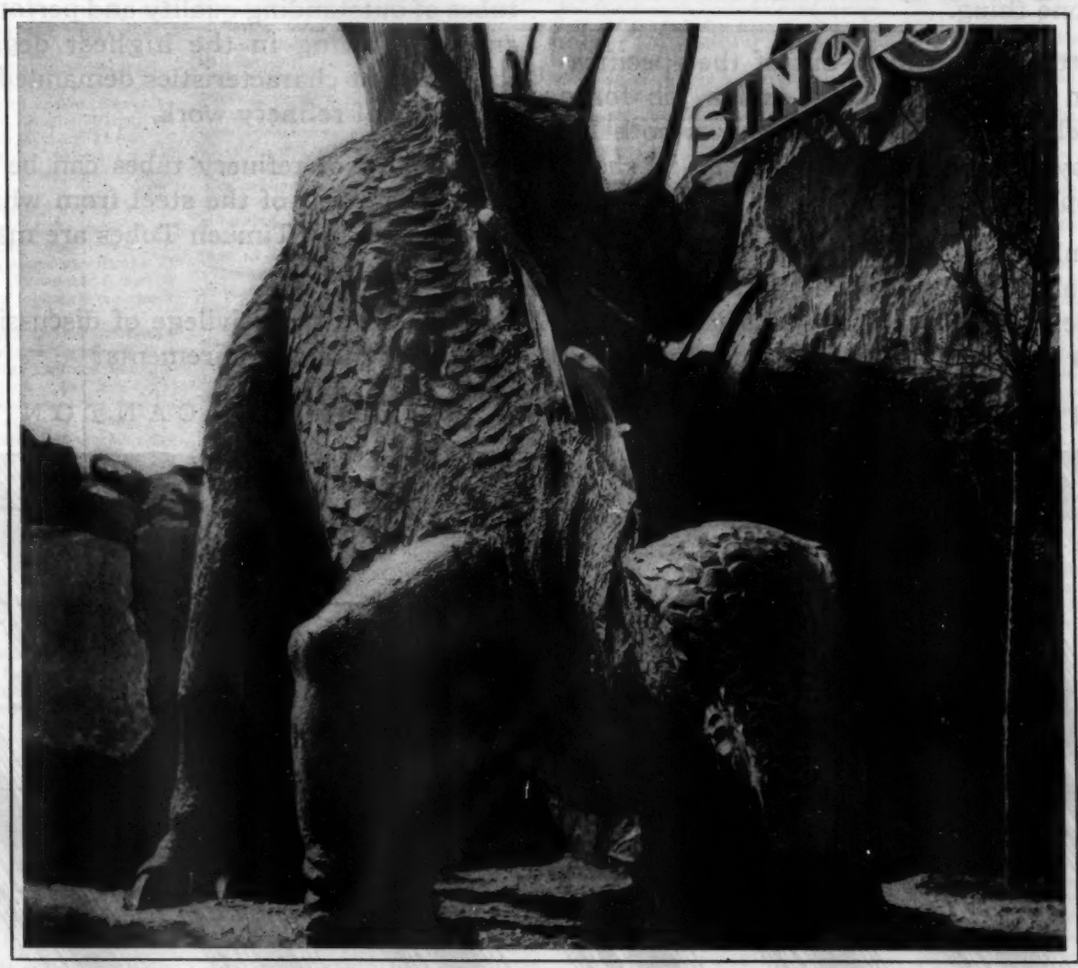
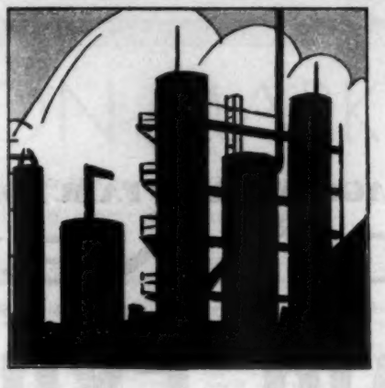


PICTURED above is one of the dinosaurs in the Sinclair exhibit at the World's Fair. This is a 25-foot Stegosaurus or Spine-Armored Dinosaur who lived during the Jurassic Period of the Mesozoic Age. This creature had both front and rear brains. The rearmost probably controlled movements of its spine-armor and hind legs. Sinclair built this exhibit to emphasize the great age of the crudes used in Sinclair Motor Oils. Attendance is averaging better than 1,000,000 people monthly.

FREE—World's Fair Edition of BIG NEWS, Sinclair's tabloid pictorial portraying the famous Dinosaur Exhibit. For your free copy, write BIG NEWS, Sinclair Refining Company (Inc.), 45 Nassau Street, New York City.



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NEWS FOR PETROLEUM REFINERS

Refiners Seek to Enjoin Government in Shipment Rules

Interests representing a group of East Texas refiners last week filed suit in the District of Columbia Supreme Court seeking to prevent the further enforcement of the rules recently made effective by the Federal Government in regard to the interstate shipment of crude oil and refinery products. The suit is the first to be filed since the government rules were announced.

East Texas refiners have had difficulty securing sufficient crude oil for their plants since the Federal rules which aim to control the production of oil in excess of state allowables, were made effective. Many of the plants have been closed down over the past two weeks.

The action, brought by F. W. Fischer of Tyler, Tex., for the Southport Petroleum Co. of Longview, Tex., and 48 other refineries, was directed against Secretary of the Interior Ickes. Justice Joseph W. Cox set the case for hearing August 15 and issued an order for Secretary Ickes to show cause why the injunction should not be granted.

Explaining that the suit did not oppose the general provisions of the national recovery law permitting trade codes, Mr. Fischer said it was aimed specifically at the section giving President Roosevelt authority to regulate interstate movement of oil.

The suit challenged the constitutionality of that section and contended that the order of the Texas Railroad Commission limiting production to three-fifths of 1 per cent of well capacity was invalid and exceeded its legal authority.

To support the plea that the oil regulations and the order were unconstitutional, Mr. Fischer's bill of particulars contended that Congress could not vest legislative powers in the executive; that it prohibited instead of regulated interstate commerce; and that the penalty of a fine of $1,000 or six months imprisonment was unconstitutional because the President could not define an offense.

The order, the suit averred, was depriving the owners of the refineries of their property rights, adding that as a result of the prohibition against moving oil in excess of allowed production, the plaintiffs have been compelled to shut down their refineries as they cannot obtain sufficient petroleum from their wells.

The suit contended there was no law in Texas limiting the amount of oil that might be produced by a well, and that the oil and gas conservation laws of the State, under which the railroad commission regulates production, did not give the authority to limit the flow.

REFINERY FOR HAMILTON

CHATHAM, Ontario, Aug. 5.—Wentworth Refineries, Ltd., incorporated recently with head offices at Hamilton, Ontario, has secured a 5-acre site in that city and will construct a small refining plant. The building permit calls for an initial outlay of $30,000.

PAN AMERICAN POWER PLANT

The Arthur M. McKee Co. of Cleveland, Ohio, will build the 5,300-horsepower plant that is to furnish the 8,000 kilowatts of electric current needed to operate the 35,000-bbl. Pan American Oil refinery now building at Texas City, Tex., according to A. L. Struven, special construction representative of the McKee company. The same company has the contract for erecting the general office building, the warehouse and the machine shop.

Selective Solvent Applications Widen in Refining Products of Petroleum

By Dr.-Ing. E. H. J. ROSENBERG*

On comparing the refining industry existing about 1912 with that existing today and considering the working principles which, divested of accompanying accessory circumstances, represent the basic factors of the industry then and now, fundamental differences are manifest specifically distinguishing both periods.

Formerly the tendency was to destroy all matter impairing the use of the individual constituents of mineral oil. Today there is prevalent the successful endeavor to separate useful constituents from those of lesser value by means of solvents. Instead, therefore, of destroying matter, as formerly, this is now cautiously treated; instead of following the sole relevant question of how to obtain useful finished products, there is a foremost endeavor to supply the market, in as cheap and economical a way as possible, with good, refined finished products, while avoiding, as far as possible, waste of material. This is the problem governing the industry today, and as simple as it appears to be at the present time, as difficult as it was to propound 30 years ago. It must be borne in mind, that at that time the industry of refining mineral oil rested solely on the tradition of a mere empiry, which amply rewarded the work based on methods of experience and practical knowledge, while considering any deviation from this path a theoretical labor promising little success, if only for the reason that not enough time and devotion was given to the work intended to serve the investigation of the composition of the individual components of mineral oil. It is true to say that it was known that kerosene distillates of different origin only yielded useful illuminating oils after gradually diversified refining. However, just as little was known with accuracy as to which class of compounds the constituents, removed by refining, belonged, as to what the hydrocarbons were, which represent the well-burnable illuminating oil. Still less unravelled was the situation in refining lubricating oil, in which crass empiry, obscured by the secret processes or old, time-worn recipes, held predominant sway in the industry. When approaching the question of the creation of rational processes for the refining of mineral oils it was essential to first investigate what, from the chemical viewpoint, was to be eliminated by the process of refining, and, in the same sense, what should remain as useful.

Edeleanu's Work Classical

Lazar Edeleanu was the first to devote himself to the scientifical elucidation of these problems. It is true there already existed some publications regarding the composition of petroleum hydrocarbons, ere Edeleanu commenced his systematic work in this field of research. The previous publications, however, entirely missed the crucial point, i.e. Why is it that Rumanian illuminating oil burns less well than Pennsylvanian; what has to be taken out from the former—removed by refining—in order to place it on an equality with the latter? I am inclined to regard Edeleanu's work of 1907, and embodied in the report of the Third International Petroleum Congress, Vol. 2, p. 665, as a fundamental classical investigation on the subject of petroleum industry.

It would be going too far to enumerate every detail, still I would not like to omit to again refer to this work. After Edeleanu had ascertained that the content of aromatic and unsaturated hydrocarbons was the cause of the unfavorable behavior of an illuminating oil, and that, therefore, the refining of the crude distillate had to be directed to eliminating or decreasing these constituents, a working basis was found on scientific knowledge for new systematic methods for the creation of new refinery processes. From this time onwards commences the emancipation of the industry from the obscurity of empiry into a sphere of activity illuminated by scientifical knowledge. Doctor Edeleanu prosecuted his investigations in the direction of searching for solvents, which would extract such constituents of mineral oil, operating to impair the use of mineral oil, yet leaving undissolved those constituents which are valuable and justify its application.

Selective Solvents in Industry

Doctor Edeleanu found in liquid sulphurous acid such a solvent, and this discovery represented the birth of the application of selective solvents in the petroleum industry. Suggestions to employ solvents in the refinery industry were already put forward before their inception by Edeleanu, but these lacked all scientific methodical foundation as well as the possibility of technical utilization.

Liquid sulphurous acid represents an ideal selective solvent, since it fulfills all the requirements which the industry demands and must demand of such a solvent. The solvent must be cheap and obtainable everywhere in unlimited quantities. It must be easily separable from the constituents of mineral oil and must not exert any chemical action on the same. Finally, it must also be of the lowest possible viscosity, and as regards specific gravity it must differ as far as possible from the oil to be processed. Liquid sulphurous acid conforms in every way to these requirements. On treating a mineral oil fraction with liquid sulphurous acid the unsaturated and aromatic hydrocarbon compounds are dissolved therein, whereas the saturated constituents, particularly when the process is carried out at a low temperature—say about 0° to —15° C.—remain practically undissolved. As regards nomenclature the dissolved constituents are designated as "extract" and the undissolved as "raffinate." Since sulphurous acid has a very low boiling point, it can be recovered by ordinary distillation from the extract, as well as from the raffinate, which always contains a few per cent of dissolved sulphurous acid. Doctor Edeleanu first tested his process to kerosene distillates and very soon after the company, which had undertaken the exploitation of his process,[1] successfully applied the same with his co-operation, also to lubricating oil distillates and to the other constituents of mineral oil.

The first plant for the exploitation of this process was erected at Rouen, France, starting operations in 1911. Since then the process has been crowned with success throughout the world. Today there are 35 plants in operation, their

(Continued on Page 44)

*World Petroleum Congress, London.

[1]Formerly "Allgemeine Gesellschaft fur chemische Industrie m.b.H.," Berlin, now styled — under the same management — "Edeleanu Gesellschaft m.b.H.," Berlin.

Many Operators in All Sections Adopt NRA Provisions

Action taken during the last week by various oil refining and marketing organizations throughout the country is indicative of the petroleum industry's intention to co-operate in the national recovery program.

Standard Oil Co. of New Jersey and associated companies, including Colonial Beacon Oil Co., Standard Oil Co. of Pennsylvania and Standard Oil Co. of Louisiana, have signed the blanket code under the National Recovery Act. The companies pledge wholehearted support. It was expected Humble Oil & Refining Co. would take similar action. Gulf Oil Corp. subsidiaries announced signing of the blanket code Tuesday.

Socony-Vacuum Corp., with 34,000 employes, stated it had signed the blanket code.

The leading subsidiaries, Standard Oil Co. of New York, Inc., and Vacuum Oil Co., Inc., also have signed, and this action is being followed by subsidiaries throughout the United States. The action is taken in anticipation of the completion of the code for the petroleum industry.

Standard Oil Co. of Ohio announced immediate adoption of the 44-hour week in its marketing activities in anticipation of approval of the oil industry code. Bulk station employes will work 40 hours a week, with no day over eight hours.

Edward G. Seubert, president of Standard Oil Co. (Indiana), announced that as an initial step in carrying out President Roosevelt's re-employment agreement the 40-hour week would be put into effect in the company's general offices, all refining offices, sales offices, and in the offices of all the company's subsidiaries, pending only the time necessary to put details of the new schedule in operation.

The American Oil Co., operating the Lord Baltimore filling stations in Washington, D. C., announced it was putting 150 men to work Monday of this week in the 72 stations which comprise its Washington chain. These men will work a five-day, 40-hour week.

Among other large companies signing the NRA agreement are the Shell-Union companies, Gulf Oil Corp., Tide Water-Associated companies, Continental Oil Co., and Texas Co. Many smaller companies have also signed the code.

LET ROAD OIL CONTRACTS

Several western states have been awarding contracts for road oil in the past few weeks and this is expected to increase the output of a number of the black oil fields in the Rocky Mountain area. The Colorado highway department awarded a contract to the Gilmore Oil Co., of California, for 800,000 gallons for $44,584, just $26 under a bid offered by the Standard Oil Co. (Indiana). Contracts for road oil were awarded to six oil companies by the Montana Highway Commission in Helena, July 19, for 4,098,500 gallons. The awards were as follows:

Yale Oil Corp., Billings and Miles City, 2,695,000 gallons.

Standard Oil Co. (Indiana), Casper, 672,000 gallons.

Northwest Stellarene Co., Shelby, 405,000 gallons.

Big Horn Oil & Refining Co., Billings, 192,000 gallons.

Home Oil & Refining Co., Great Falls, 50,000 gallons.

Independent Oil & Refining Co., Billings, 75,000 gallons.

Reaction in Gulf Coast Gasoline Markets Arrests Upward Trend in the Atlantic Coast Districts

By A. E. MOCKLER
New York Bureau, The Oil and Gas Journal

NEW YORK, Aug. 7.—The easier undertone evident in the Gulf Coast gasoline market at the close of the week brought about some softening in the position of motor fuel markets in East Coast territory, and a general upward movement, which had loomed in the offing throughout the week, was apparently checked at the last minute, after one or two sellers had already increased their posted prices by one-quarter cent. The lowering of crude prices in the Southwest, followed by similar action in the central fields, likewise exerted a disturbing influence, bringing to an end, temporarily at least, a sustained drive toward higher levels on the part of refined product prices throughout the territory.

The break in crude prices and the weakening of gasoline markets in the Southwest has not only affected the market position in the East, but is expected to exert an important influence in the export market, where it is felt that American sellers will now be in a more favorable position to compete with Russia and Rumania in European and other markets.

It is known, however, that many interests in the industry have been of the opinion that the recent run-up in prices had been too rapid, and had been at a pace that failed to allow for consumption to catch up with the market. The present softening in price structures is expected to achieve this object, and it is generally believed an early recovery will be witnessed, with prices moving slowly but steadily toward higher levels in response to constructive economic developments.

Refinery Gasoline

Tank car gasoline prices started upward early in the week when a quarter cent increase on gasoline of 65 octane and above was named by several sellers, although the general market failed to reflect the advanced level. Toward the close of the week the market executed a complete about-face, following the reported offering of gasoline cargoes for coastwise shipment from the Gulf at prices one-quarter cent under previous levels.

Posted prices at important East Coast tank car marketing centers are as follows: U. S. Motor, below 65 octane, New York Harbor, 5¾ to 6 cents; Philadelphia, 6 cents; Boston, 5.95 cents; Baltimore, 5½ to 5¾ cents, and Charleston, S. C., 5¾ to 6 cents; 65 octane and above, New York Harbor, 6 to 6¼ cents; Philadelphia, 6¼ cents; Boston, 5.95 to 6.20 cents; Baltimore, 5¾ to 6¼ cents, and Charleston, 6 cents.

Notwithstanding the slightly easier tendency, jobbers continued active buyers in the tank car market, and were still keeping their storage full in most instances, due to the continued heavy demand reaching their distributors.

Refiners in East Coast area are still handling third grades as a regular part of their marketing activities, and there has been a good movement of the cheaper grade, the record hot weather having stimulated sales.

There has been very little buying of the higher vapor pressure natural gasolines by the East Coast trade during the past few weeks, and the market is not expected to witness much activity until later.

Tank Wagon Gasoline

Steady tank wagon and service station gasoline markets prevailed. The quarter cent increase in tank car quotations put into effect by a few refiners failed to bring about a corresponding change in retail markets, and in view of the weaker undertone in the Gulf cargo market it was expected the tank car market would go back to former levels if offerings at the lower price at the Gulf did not force a corresponding reduction in the wholesale market here.

If Gulf cargo prices should stabilize at the recent level, which was one-quarter cent under previous levels, it was felt a quarter-cent cut in tank wagon and service station prices might be inaugurated throughout the East.

Marketers operating in East Coast territory reported an exceptionally heavy gallonage during the week. Tank wagon delivery departments were rushed to keep pace with the demand in some sections.

Distributors report the recent improvement in quality of regular grades has tended to divert some considerable volume of buying from the third grade to the regular, although the cheaper product is still coming in for a substantial movement. Major distributors in many instances are now handling branded third grades, and are thus in position to meet any price cutting which may develop. The current season has been singularly free of price cutting in most parts of the area and marketers as a rule have experienced no difficulty in obtaining full posted prices for all grades of gasoline at their retail stations.

Kerosene

Current production of East Coast refineries is moving out readily, and the tank car market is showing a steady tone at 5 to 5¼ cents, f.o.b. refineries or terminals. With the fall consuming demand it is expected refiners in this area will bring in larger shipments from California and the Gulf Coast.

Tank wagon kerosene was well maintained and marketers continue to report a favorable gallonage. The increasing popularity of range distillate burners is steadily opening up new markets in many parts of the East Coast territory.

Furnace Oil

A steady undertone continued in the furnace oil market with refiners posting No. 1 oil at 5 cents and No. 2 grade at 4 cents, both in tank car lots, f.o.b. terminals. While refiners are still discussing the possibility of higher prices when the heating season arrives, it is stated no action toward higher prices can be taken in this area while Gulf Coast and California furnace oil quotations remain at current levels. A number of cargoes of California furnace oil have been fixed for shipment into East Coast territory during the coming heating season, and it is understood additional cargoes are being negotiated.

Tank wagon furnace oil quotations are unchanged on all grades, with business still rather light, although marketers are offering to fill up the tanks of their customers now and bill them on September 1, with payment becoming due on October 1. This is being done in most instances to give the marketers additional storage for incoming cargoes from California and from the Gulf.

Paraffin Wax

Domestic demand had eased off slightly and the market tone had also eased off somewhat, although no actual reductions in spot quotations. Consumers are reported to have covered prompt requirements and are holding off the market until price levels are thoroughly established.

In the export division of the wax market the price trend continued upward. Sellers were quoting 123-125 a.m.p. a quarter cent up at 3.45 cents per pound, with 125-127 a.m.p. up 10 points at 3.50 cents per pound and 130-132 a.m.p. also 10 points higher at 4 cents per pound. On 133-135 a.m.p. the market was up 7½ points at 4.375 cents per pound, while 135-137 a.m.p. was 15 points higher at 4.75 cents per pound. Export buying continued fairly active.

Bunker Oil

Bunker fuel oil was coming in for better demand and the market remained steady at 85 cents per barrel, bulk, at terminals, posted at principal East Coast ports, with the New York quotation 80 cents to contract buyers in the oceangoing steamship trade.

Continued strength in bunker oil markets in California and at the Gulf is making for stable conditions in East Coast markets, and refiners here believe any strengthening in quotations at these points will bring about an upward movement here. The recent shortage of bunker fuel oil at a number of East Coast ports has been relieved to a considerable extent by heavier importations in bond for delivery for foreign vessels at Atlantic Coast ports.

Diesel Oil

Some interest was aroused in local refining circles by reports from Europe of renewed agitation for the establishment of standardized Diesel oil specifications on fuel oil for mercantile marine service.

Refiners here continue to post $1.75 per barrel for Diesel oil, in bulk, f.o.b. terminals, and reported that gallonage was well maintained throughout the week.

Gas Oil

Industrial consumers were drawing stocks of gas oil in slightly better volume, and the market was steady to firm at 4 cents for 28 gravity minimum oil in tank car lots.

Gulf Coast sellers are quoting gas oil at 3 cents per gallon for the 28-30 gravity product in cargo lots, and California refiners continue to post 80 to 90 cents per barrel. The California product offers a rather attractive buy to consumers able to charter tanker tonnage at advantageous levels, but the Gulf Coast price basis does not offer sufficiently wide margin to encourage the coastwise movement of this oil in the open market.

Lub Oil

If lubricating oil is as accurate a barometer of industrial activity as is generally believed, current reports from this market would indicate a sustained recovery in manufacturing operations in many lines of industry. Refiners report their domestic sales have shown substantial improvement in recent weeks, and export volume has likewise registered a heavy increase.

Featuring last week's market was a general increase of 1 cent on cylinder and bright stocks as of Monday, followed by an additional rise of one-half cent on bright stock, No. 8 color. Revised quotations on these oils are as follows: 600 Warren E, 24 cents; 600 S.R. unfiltered, 20¼ cents; 650 S.R. unfiltered, 22½ cents; 600 flash S.R., 23½ cents; 630 flash S.R., 28½ cents; bright stock, No. 8 color, 30½ cents; and bright stock, No. 6½ color, dilute, 29½ cents, all f.a.s. New York harbor, cooperage included.

Red and pale engine oils were well held last week at the recently advanced price levels, and refiners reported they were getting more inquiry for both prompt and nearby deliveries.

Exports and Imports of Refined Products; Receipts of California Oil in the East

NEW YORK, Aug. 7.—The break in crude oil prices in East Texas again upset the export market. A number of cargoes have been booked for August lifting, and it is not expected any additional buying for shipment before September will be witnessed.

The status of hot oil moved to Gulf loading terminals prior to the shutting down of the lid remained in dispute last week. This oil was variously reported offering at 85 to 90 cents per barrel for prompt lifting in cargo lots. Domestic buyers were unwilling to contract for any of this oil due to the inability of the seller to supply the necessary certificates of authentic origin, to permit of its shipment, and foreign buyers were likewise wary of possible complications. The ultimate disposal of this oil remains a problem, and until it is cleared up the presence of these supplies at Gulf terminals is expected to prove a continued source of uncertainty to spot market operations.

Export gasoline weakened somewhat, and quotations were lower all along the line, although no cargo bookings at the lowered price levels were reported. U. S. Motor was quoted at 4¼ cents, off a quarter cent, with 60-62 400 endpoint, and 61-63 390 endpoint, showing a corresponding reduction at 4½ cents, while 64-66 375 endpoint was offered at 4⅜ to 4½ cents, contrasted with a quotation of 4⅞ to 5 cents during the previous week. It is reported here that Constanza is underselling the American market.

Lub oil exporters are faced with new complications in their sales to foreign distributors by the growing tendency to market known brands of American lubricating oils in the export trade in sealed containers, either bottles or cans. The spread of this practice in foreign markets will give the major integrated companies, with established brands in foreign fields, a decided advantage over bulk oil sellers.

Increasing world movement of crude and refined petroleum is reflected by a substantial increase in oil tanker operations. Freight rates have increased slightly on both dirty and refined oil cargoes, but the re-entry of numerous tankers into service after protracted periods of lay-up has tended to hold charter quotations down to relatively low levels.

Petroleum Exports

The following table shows exports of principal refined petroleum products re-

(Continued on Page 40)

Declines Feature of Markets in Chicago District; Buying Rush Expected With Action on Code

By R. C. CONINE
Chicago Bureau, The Oil and Gas Journal

CHICAGO, Aug. 7.—Refined products markets in Chicago district are reflecting the truth of the maxim that Heaven helps those who help themselves and vice versa. Apparently expecting a miraculous panacea from Washington, crude oil production and runs to stills are unstemmed, and the result is seen in the crumbling crude oil, gasoline, kerosene, special naphtha and distillate price structures in a period when other commodities are skyrocketing towards 1929 levels, warranted or unwarranted. Based on Monday's prices the recessions since July 18 are as follows:

Third grade gasoline has declined half a cent; regular grade gasoline has moved down from half a cent to three-quarters of a cent, and premium grade gasoline has been cut from an eighth to three-eighths of a cent. The 60-62 400 endpoint gasoline is down five-eighths of a cent; the 64-66 375 endpoint gasoline is down five-eighths of a cent, as is the 68-70 360 endpoint material. Fighting grade aviation gasoline of no octane specifications is down a quarter to half a cent.

The 41-43 and the 42-44 water white kerosenes are an eighth of a cent to a quarter of a cent lower. The 38-40 prime white and straw distillates and the 32-36 straw distillate have held up slightly better registering an eighth of a cent decline. The industrial gas oil is still holding to the high of 1½ cents, but the low end has dropped an eighth of a cent. The zero fuel oils are not being offered freely and continue to be quoted at former levels.

Refined wax and petroleum coke marked up the only advances, the wax quotations going up a quarter of a cent a pound, and the coke prices moving up 25 cents a ton.

Margin Set-Up Threatened

On August 1, the 60-day moratorium period suggested by Allan Jackson, of Standard Oil Co. (Indiana), came to a close, and almost immediately rumors of strong raids against customers of rival companies by various companies were heard and have since been verified. Complaining companies have photostat records showing, apparently, that discounts to large consumers have been increased by as much as a cent and a half a gallon in order to take the business away from another company. The present trend of affairs leads a number of veteran observers to believe that during the period preceding the signing of a code of fair marketing practices for the oil industry by President Roosevelt, the industry is to witness the most intensive competitive conditions it has known in many years.

Special Naphtha Paradox

The debacle in the special naphtha tank car markets is peculiarly interesting. While other paint ingredients have moved up in price from 30 to 80 per cent, while rubber goods have increased in price, and while cleaners have made advances, the special naphthas have broken suddenly downward and are quoted three-quarters of a cent lower per gallon. One of the manufacturers naming the new low prices on special naphthas makes the distinction that these prices are for their jobber trade only and not applicable on large industrial accounts. It is interesting to note that the 180-250 endpoint lacquer diluent is sold to the jobber who buys in tank car lots at 6½ cents plus the 2.44 cents freight charge, or a total of 8.94 cents. This jobber sells at 18 cents a gallon for a profit (before costs other than material) of 9.06 cents a gallon.

More Activity This Week

Jobbers have not been participating in the tank car open markets to any extent. The volume of materials moving on contract is fairly large, however, and probably offers little grounds for satisfaction on the part of the sources. It is understood that more major companies are now offering the three octane grades of gasoline. Formerly the materials sold were the third grade, below 59 octane, and the regular grade, 60-64 octane. Prices quoted Monday on the three grades in Chicago by one of these companies is 3½ cents for the third grade, 4¼ cents on the 64 octane gasoline, and 4¾ cents on the 70 octane (colored) gasoline. Outside of Chicago the prices are 3⅝ cents on the third grade, 4½ cents on the 64 octane gasoline, and 5¼ cents on the colored 70 octane gasoline.

With decisive action expected on a code for the industry a number of distributors are looking for heavy buying on the part of jobbers at the first indication of rising prices. Gasoline storage has been added by several distributors who have handled fuel oils and distillates exclusively, and by some who have acted solely as commission brokers in the past. While independent interests are looking for the major benefits from the NRA, there is no lack of those who feel that it would be to their advantage to tie up with one or another of the larger companies.

The actual distress gasoline, third grade, which has overhung the Chicago district markets for several weeks following the heavy influx from areas where it was sought to anticipate isolation due to hot oil and products regulations by the Government, is slowly disappearing, and this week should see the end of that adverse factor, unless there is another flood from those who claim that the sources of their oil are indeterminable due to commingling in storage tanks. Refiners are reported to be holding their better grades of gasoline for higher prices. One Texas refiner is understood to be holding to a 4⅞-cent price on his 65 or better octane gasoline. Prices Monday show spreads of half a cent in the three grades, compared with three-quarters of a cent between the third grade and the regular grade, and a quarter of a cent between the regular grade and the premium grade, last week. These spreads indicate fairly well, it is said, the maximums which may be expected with the "Q" tetraethyl lead compound in the picture. Figures are not yet available on the effects of the reduction of the service station premium on the premium Ethyl grade to 2 cents over regular. However, the return of better times, and the missionary work of "Q" may have the effect of restoring much of the old Ethyl business. Ethyl lost some of its appeal to sellers when the Q.D.A. was brought down on the level of the regular grade.

Gasoline Tank Car Prices

Gasoline tank car prices Monday were still receding as follows: Regular grade, 3¾ to 4¼ cents; premium grade, 4¼ to 4¾ cents; third grade, 3¼ to 3½ cents; 60-62 400 endpoint gasoline, 3⅝ to 3½ cents; 64-66 375 endpoint gasoline, 3⅝ to 3¾ cents; 68-70 360 endpoint gasoline, 3¾ to 4 cents; aviation, no octane specifications fighting grade, 4¼ to 4¾ cents. Prices are unsettling as reflected in the wide spreads for each of the materials.

Special Naphtha Tank Car Markets

The special naphtha tank car markets offer the greatest surprise in a downward break of three-quarters of a cent throughout the list. Monday's prices are as follows: Cleaners naphtha, 5¼ to 5½ cents; lacquer diluent, 180-250, 6½ to 6¾ cents; lacquer diluent, 140-200, 7½ to 8 cents; rubber solvent, 5¼ to 5½ cents; Stoddard solvent, 4¾ to 5 cents; petroleum thinner, 4¼ to 4½ cents; V.M.&P. naphtha, 5 to 5¼ cents; petroleum spirits, 4 to 4¼ cents. At least one of the larger sellers of special naphthas announces that he will stay out of the open market rather than meet these prices. As more than 95 per cent of the special naphtha business is on contracts, most of which give the buyer every possible advantage, the lowered spot prices are causing considerable trouble.

Kerosene Tank Car Prices

Kerosene tank car prices continue to weaken although there is no indication that stocks are out of line. Any further softening, observers say, will have the effect of depressing the distillate structures which have held surprisingly well, as the kerosenes are getting too near the distillate levels. The 42-44 water white material is in better demand and harder to find. Monday's prices were 2⅜ to 2⅝ cents for the 41-43 water white material and 2½ to 2¾ cents for the 42-44 water white kerosene.

Fuel Oils and Distillates

The 32-36 industrial gas oil is scarce and is being sold at slightly higher prices, the new range being 1¼ to 1½ cents. The prime white and straw distillates, as well as the heavier fuel oils, are unchanged in price. The larger refiners are reported to be running these materials into storage in anticipation of the nearing burning oil season purchasing.

Refined Wax

Refined wax prices were advanced a quarter of a cent a pound, August 1, both in the domestic and the export markets. Declining stocks and better demand continue to be noted.

Petroleum Coke

Coke prices have been advanced 25 cents a ton in the district.

Do You Remember?

From The Oil and Gas Journal Files

25 Years Ago

August 8, 1908

The 6-inch drill pipe which had been pulled, the derrick and all the machinery excepting the boiler, fell into the hole made when the J. M. Guffey Petroleum Co.'s No. 1 Hirsch at Humble, Tex., blew out. Next a string of 8-inch pipe, stacked nearby, also disappeared, all within 24 hours. Then the well sanded up, which choked off the gas.

One of the new oil burning torpedo boat destroyers of the English navy made a test trip and was speeded up to 38 miles an hour. Another triumph for oil!

20 Years Ago

August 14, 1913

The Magnolia Petroleum Co. will lay an 8-inch pipe line from Cushing, Okla., to Electra, Tex., over 200 miles distance. Connection will be made at Electra with the main line to Corsicana and thence to Beaumont. The company will also establish 14 filling stations in Oklahoma.

Bradford, Pa., producers are "flooding" old oil wells with fresh water and the resultant pressure on the sand is forcing the dormant oil to nearby wells, increasing the production materially. The Bureau of Mines learns of this fact with interest, but it is said the bureau will endeavor to keep the practice from spreading to Oklahoma fields by means of Interior Department orders.

The largest gas fields in the northern Mid-Continent are those near Iola, Caney and Independence, Kans., and Copan, Bartlesville and Collinsville, Okla.

John M. Crawford, president of the Parkersburg Rig & Reel Co., of Parkersburg, W. Va., is the proud father of a son, who will be named John M., Jr.

10 Years Ago

August 9, 1923

The Hull Pool is the largest producer in the Gulf Coast or Southwest Texas areas. It produces 24,500 bbls. per day.

H. A. Melat, general superintendent for the Gulf Production Co. in North Texas, is tendered a testimonial dinner to commemorate his 20 years of service with the J. M. Guffey Petroleum Co. and Gulf Production Co.

William Kratzer, Clarion, Pa., the first man to use the cherry limb or "doodlebug" in attempting to locate oil, celebrates his one hundredth birthday. He went into the oil business immediately after the Drake well was completed in 1859.

Webb and Zapata Counties in Texas are producing an average of 400,000,000 feet of natural gas per day.

Because of the Sabbath observance laws of Arkansas no slush pit construction, pipe line building, rig building, hauling or spudding in may be done on Sunday.

NATURAL GASOLINE MANUFACTURE

Manufacturers to Consider Application of NRA Code

With several companies having already signed the National Industrial Recovery Administration Code (NRA code) and others expected to do so before the end of the month, the natural gasoline branch of the oil industry has another operating problem to solve. Meetings for the discussion of the application of the code among manufacturers is to be held this week under the auspices of the Natural Gasoline Association of America.

As in the case of the petroleum refining branch, the natural gasoline manufacturers have several problems to consider which will not be found in any other manufacturing industry. With few exceptions the natural gasoline plants which now total approximately 900, are operated 24 hours a day, 365 days out of a year. In other industries it has been possible to shorten hours and by speeding up production, the plant output is being maintained with little additional labor. This plan, however, apparently is not feasible in any of the natural gasoline operations, the raw material for whose operations is obtained throughout a 24-hour period.

Investigations have shown in many cases that the natural gasoline plants are operated with two 12-hour shifts. In the older fields the natural gasoline plant operations are largely automatic and very little manual control is required. While an operator may be on duty 12 hours daily the actual hours of employment do not exceed three or four. In many cases the employes live in lease houses furnished by employers and have other duties in addition to watching the natural gasoline plant operations. In many of the older fields where the natural gasoline production totals a few hundred gallons daily the plants are operated by pumpers who spend most of their time tending the wells adjoining the plants. In these cases the operations probably will come under the plan adopted by the producing divisions of company operations.

In the case of the larger plants the operation usually is distinct from all other oil operations and it is in these cases that the NRA code has special significance. Some are operated on 12-hour shifts, some eight hours and in at least two cases reported the past week plans have been completed to operate on six-hour shifts or five eight-hour shifts per week. Like the refining industry, the natural gasoline manufacturers will welcome the opportunity to employ more men provided prices for their products can be advanced to the point where the extra costs will be offset in plant revenue. The long schedules in effect at many plants has been largely due to the ruinous prices received for the finished products over the past two years. In many cases the gross revenue has not paid the labor cost plus the cost of the casinghead gas. Owners were faced with the alternative of either shutting down their plants completely or continuing operation with the minimum labor costs.

CANADIAN PLAN DROPPED

CHATHAM, Ontario, Aug. 5.—Minor Merriwether, representing Los Angeles interests, who has been negotiating with independent operators in the Turner Valley Field for construction of a combination gasoline absorption and carbon black plant, has announced the definite abandonment of the project, owing to failure of independent operators to contract for the requisite gas flow.

Natural Gasoline Has Prominent Part in New Research Work Covering Fuels

The Co-operative Fuel Research Steering Committee is now engaged in research work which it is hoped will result in the development of a standard aviation method for rating motor fuels as to their performance. The investigation is of special interest to the natural gasoline industry because of the wide use as aviation motor fuels. This situation is reflected in the fact that a domestic grade of aviation natural gasoline is being used as one of the test fuels in the work now under way.

H. K. Cummings, of the U. S. Bureau of Standards, explained the research work in a paper presented at the World Petroleum Congress held late in July at London, England. In his paper at the congress Mr. Cummings reviewed the various methods used in the United States to specify the detonation characteristics of aviation fuels and called attention to several studies of the correlation between laboratory ratings and the performance of fuels in multicylinder aircraft engines.

The new investigation he explained is being conducted jointly by the aircraft engine manufacturers, the gasoline producers and those government agencies concerned with the quality of aviation fuels. This program provides for three reference fuels of 73, 80 and 87 octane numbers by the C.F.R. Motor Method and three test gasolines: (a) Straight-run; (b) highly cracked and (c) an aviation natural gasoline. The following testing procedure is being followed:

Engine Test Procedure

Purpose.—The purpose of the procedure outlined below is not to determine the fuel requirements of the engines being tested, but rather to determine the correlation or lack of correlation of octane number determinations by the C.F.R. Motor Method of widely diverse fuels with their behavior in multicylinder engines. The behavior of the very diverse fuels will either indicate that C.F.R. Motor Method correctly indicates the value of the fuels, or will enable it to be so modified as to correctly evaluate fuels in terms of their true average aircraft engine performance.

1. Test gasolines should be limited to representative products of the following types:

(a) Those whose knock characteristics are essentially unchanged under varying test conditions.

(b) Those whose knock rating decreases sharply with increasing severity of test conditions.

(c) Those whose knock rating improves with increasing severity of test conditions.

2. Work to be done in three brackets, i.e., 73 octane, 80 octane and 87 octane, octane numbers by C.F.R. Motor Method.

Three test gasolines: (1) (a), (b) and (c) will be provided.

It has been decided that it is impractical for the engine manufactures to do their own blending. The following blends shall therefore be supplied to the engine companies in 55-gallon drums.

	Octane No.
1 A3 + C7 (reference fuel)	73
2 C7 + lead (reference fuel)	80
3 C7 + lead (reference fuel)	87
4 Gasoline (a) test fuel*	73 ± 1
5 Gasoline (a) plus lead	76⅓
6 Gasoline (a) plus lead	80
7 Gasoline (a) plus lead	83⅓
8 Gasoline (a) plus lead	87
9 Gasoline (a) plus lead	89
10 Gasoline (a) plus benzol	76⅓
11 Gasoline (a) plus benzol	80
12 Gasoline (a) plus benzol	83⅓
13 Gasoline (a) plus benzol	87
14 Gasoline (a) plus benzol	89
15 Gasoline (b) test fuel†	69⅓
16 Gasoline (b) plus lead	73
17 Gasoline (b) plus lead	76⅓
18 Gasoline (b) plus lead	80
19 Gasoline (b) plus lead‡	83⅓
20 Gasoline (c) test fuel†	69⅓
21 Gasoline (c) plus lead	73
22 Gasoline (c) plus lead	76⅓
23 Gasoline (c) plus lead	80
24 Gasoline (c) plus lead	83⅓
25 Gasoline (c) plus lead	87
26 Gasoline (c) plus lead	89

*Without lead or benzol. †With lead if required. ‡If not over 6 c.c. lead are required.

Further supplies of all the blends shall be kept subject to supply on call by the engine manufacturers.

Samples of the fuel blends shall be supplied to the correlating knock testing laboratories.

It is suggested that tests be run on the following engines:

1. Super Conqueror, 6¼ C.R., 250° F. jacket, 10 to 1 blower gears.

2. P. and W. R-1,690, 6 to 1 C.R., 10 to 1 blower gears.

3. Lycoming R-680, 6½ C.R., supercharged is possible.

4. Continental R-670, high compression.

Engines 1 and 2 to be used with all fuels.

Engines 3 and 4 to be used only with Fuels 1, 2, 4-7, 10-13, 15-19, 20-24.

In the event that the above engines are not acceptable to the manufacturers, other engines may be used.

Each engine manufacturer will take initially one group of gasolines: Wright Co., gasoline (a) blends 4-14; Pratt & Whitney, gasoline (b) blends 15-19; Lycoming and Continental, gasoline (c) blends 20-24; and determine matches. The four companies will then communicate their results to each other, and P. & W. will then start from Lycoming, Wright and Continental results on (a) and (c) gasolines, which will give a preliminary basis for matching in the R-1,-690. Wright, Lycoming and Continental will also check each other's and the Pratt & Whitney results. This procedure will avoid each company having to completely explore all fuels, there being reason to believe that the matches found in one type of engine will not be far off in another.

After all matches have been obtained, if any engine manufacturer feels able to do so, the matches should be checked on other models.

3. Each cylinder of each test engine shall be equipped with two thermocouples, one gasket type thermocouple inserted under the rear spark plug, and the other peened into the base flange at the rear of each cylinder. All thermocouples to be connected through a selector switch to a sensitive and accurate temperature indicator.

4. The usual instruments for determining power output, engine speed, and fuel consumption shall be employed.

5. The procedure for testing the fuels shall be as follows:

(a) Each engine shall be subject to mixture control runs at rated speed; the mixture control shall be varied from full rich to the minimum allowable specific fuel consumption.

(b) Mixture control runs shall be run on the reference fuel blends 1, 2, or 3, depending upon which octane number bracket is being worked in.

(c) The mixture control characteristics determined in (b) shall be matched as nearly as possible by selection of a fuel blend from the group under test which has performance characteristics nearest like those determined in (b).

(d) If the knock rating of the fuels 1, 2, or 3 is not sufficiently high for full throttle operation the throttle shall be closed until satisfactory operation is obtained with reference fuel being tested. The throttle shall be maintained in the position thus determined during the process of matching blends.

(e) Each test engine shall be calibrated on the same reference fuel at the beginning of each day's run.

6. At each mixture control position after cylinder temperatures, fuel consumption, and power have been determined, the ignition switch shall be cut to determine the degree of after-firing if any.

7. A 1-gallon sample drawn from each drum of each blend shipped shall be retained by the shipper for check.

8. A 1-gallon sample of each barrel of each blend used in engine test shall be sent to central laboratories for check if required.

With the information above gained, each manufacturer will be able to state to the interested laboratories that for a particular engine each of the test fuels has been calibrated in terms of base stock plus lead, where necessary, and matched with reference fuel plus lead, where necessary, likewise, data will be accumulated on benzol blends in the range considered practicable. With these data at hand, the laboratories are faced with the problem of correlating the octane numbers of each of the fuels in question, mixed in accordance with the manufacturer's determinations.

Experience in conduct of the foregoing tests may show the feasibility of supplementary flight tests, to be conducted on the whole series of test fuels or a selected portion of these fuels.

The following men will serve as a steering subcommittee to analyze and correlate results: H. K. Cummings, chairman; R. F. Gagg, S. D. Heron and W. W. White.

Natural Gasoline Exports Showed Large Gain in June

WASHINGTON, D. C., Aug. 5.—Exports of natural gasoline in June showed a large increase over May according to information released today by the Bureau of Foreign and Domestic Commerce of the Department of Commerce. The June exports of natural gasoline from the United States totaled 287,323 bbls. valued at $438,862 which compares with exports of 77,795 bbls. valued at $119,640 in May.

The natural gasoline was shipped to buyers in four countries in June. The United Kingdom purchased 118,989 bbls., Canada 86,032 bbls., The Netherland West Indies 76,426 bbls. and France 5,876 bbls. During the month of May the United Kingdom received no natural gasoline. In May buyers in Japan purchased 15,494 bbls. but none in June.

I. E. HIRT DIES SUDDENLY

I. E. Hirt, 52, of Glendale, Calif., who has been connected with natural gasoline plant operations in the Mid-Continent and California for several years, died suddenly in Fort Worth, Tex., Thursday, August 3. Mr. Hirt at the time of his death was visiting his former business associate, W. F. McDermott of Fort Worth. He is survived by his widow and one son.

NEWS FOR SALES DEPARTMENTS

Gasoline Exports Showed Small Gain in June Over May

WASHINGTON, D. C., Aug. 5.—Exports of gasoline, naphtha and other finished light products in June both in bulk and in containers showed a considerable increase over such exports in May, according to data by the Bureau of Foreign and Domestic Commerce. In June the gasoline exports totaled 2,067,577 bbls. in bulk valued at $3,544,946 and 86,734 bbls. in containers valued at $415,002, compared with 1,890,605 bbls. in bulk valued at $3,412,483 and 64,477 bbls. in containers valued at $316,087 in May. In June the United Kingdom decreased its gasoline imports from the United States from 584,066 bbls. in bulk to 401,321 bbls. in June. France increased these imports from 351,890 bbls. in bulk in May to 489,416 bbls. in June. The Netherland West Indies increased gasoline takings in bulk from 53,702 bbls. in May to 149,951 bbls. in June.

Illuminating oil was exported in bulk in June to the extent of 270,242 bbls. valued at $502,252 showing a decrease in these exports compared with the month of May when the quantity was 534,121 bbls. valued at $1,006,030, or about double the quantity compared with June.

Exports of gas oil and distillate fuel oil in June totaled 481,825 bbls. valued at $582,825 compared with 1,073,130 bbls. valued at $1,187,377 in May, or about twice the quantity exported in June.

Residual fuel oil exported in June totaled 492,257 bbls. compared with 749,063 bbls. exported in May.

Barrels of lubricating oil, red and pale, exported in June totaled 388,994 bbls. compared with 394,234 bbls. in May; black oil exports totaled 44,510 bbls. in June compared with 41,546 bbls. in May.

Cylinder oil, 184,472 bbls. in June compared with 208,291 bbls. in May. Lubricating greases exported in June totaled 5,709,986 pounds compared with 5,630,388 pounds in May.

Paraffin wax, unrefined, exported in June totaled 5,287,120 pounds compared with 6,581,450 pounds in May and unrefined exported totaled 13,028,124 pounds compared with 12,336,745 pounds in May.

Enlarging Bulk Station Facilities in Michigan

DETROIT, Mich., Aug. 5.—Several oil companies are enlarging their bulk station facilities for handling distribution in this city and section of the state. The Texas Co. has purchased 25 acres in the River Rouge district adjoining the Michigan Central Railroad and has started the construction of steel storage which will ultimately involve an expenditure of a half million dollars. The Standard Oil Co. (Indiana) tankage is in the same section.

The Pure Oil Co. and the Sun Oil Co. are building tankage on a small track at Holbrook Avenue and Buffalo Boulevard on Detroit east side. This is the Detroit terminal of the gasoline pipe line which the two companies are completing connecting to the refineries of the two companies located at Toledo. This line will be in operation in the near future. The two companies also are building large truck garages at the terminal. Expenditures at the terminal will total several hundred thousand dollars.

New Investigation Condemns Proposed Fuel Blends of Alcohol and Gasoline

Establishment of precedents for "class" legislation to help some industries at the expense of others, abandonment of the American policy of having each industry stand upon its own feet, and increases in public costs without compensating benefits, are seen as among results that might be expected from legislative enactment of "farm relief" proposals making compulsory the use of alcohol-blend motor fuels.

In a 109-page report prepared after a prolonged study of the economic aspects of plans to promote farm relief by compelling motorists to use fuel made by blending 5 per cent alcohol manufactured from surplus agricultural crops with gasoline, the Division of Industry Research of General Marketing Counselors suggested that other means be devised for helping the farmer without penalizing other industries or the general public. Either a new outlet must be found for surplus agricultural products, or production reduced, the report said, adding that Congress has given President Roosevelt and Secretary Wallace power to reduce production, "thus making it possible to correct the situation by that means."

The report estimated that compulsory use of alcohol-blend fuels would force the public to pay more than $300,000,000 yearly in higher fuel prices alone. It was estimated also that the current $4,525,000 cost of operating the Bureau of Internal Revenue would be doubled in enforcing blend laws.

Farmers Left Poorer

So far as the farmer is concerned, it was found there might be a $218,190,000 increase in the income of corn and barley growers through higher prices for these crops, because of their use as raw material for alcohol manufacture. However, it was warned that farmers might expect an increase in farm expenses of $238,659,000. The farmers thus would be left $20,469,000 poorer after paying $70,656,000 more for motor fuel, $160,322,000 more for corn feed and $7,681,000 more for barley feed for livestock. No estimates were made of definite losses to farmers who do not raise corn or barley, nor to those whose markets for lards, fats, and oils would be damaged by the

(Continued on Page 33)

States Slow in Starting Road Oil Building Work

The road oil programs are slow in getting started this year, largely due to the shortages of finances in the state highway departments, according to information obtained in a recent check of states. Indications are that the amount of oil and asphalt used this year will be less than the year 1932 unless we should have an open fall and winter construction season.

The Kansas State Highway Department will build about 1,034 miles of oil and asphalt roads, which is less than last year's program. This includes a proposed 300 miles in the NRA program. Nebraska State Highway Department is starting its NRA program by receiving bids August 11 on 85 miles of oil and asphalt roads involving a million and a quarter gallons of these materials.

The New Mexico Highway Department has already let contracts for 35½ miles of oil-processed roads, and its NRA program, which will soon be started, will have a substantial mileage of the oil type. The Missouri Highway Department has let contract and made purchases which involves more than 5,000,000 gallons of road oils and cutback asphalts. This is approximately one-third of the amount of material used in 1932, but it is understood there is yet considerable mileage of oil and asphalt types to be placed under construction.

The Texas Highway Department program thus far covers about 175 miles of penetration asphalt roads, which is a very small program for that State considering the advanced stage of the construction season.

ALLEGE INFRINGEMENT

WASHINGTON, D. C., Aug. 5.—The Texas Oil Co., producers of "Fire Chief" gasoline yesterday petitioned the Supreme Court of the District of Columbia to restrain E. H. Johansen from advertising a brand of gasoline called "Red Chief."

Imperial Oil Makes Special Offer to Farmer Accounts

CHATHAM, Ontario, Aug. 5.—Announcement has been made by Imperial Oil, Ltd., in response to inquiries prompted by a strengthened market for wheat, that the benefits offered by the company's debt adjustment plan when wheat was at its low levels are still available to farmers in the Canadian prairie provinces who may be indebted to the company for products supplied on credit in 1929 and 1930.

Until October 1, 1933, a farmer owing $70 may wipe out his obligation by a payment of only $49 or a farmer wishing to pay part of his indebtedness will be credited with $14.28 for each $10 paid on account.

"If wheat continues to sell at 70 cents," says the statement, "a farmer who takes advantage of the Imperial Oil debt adjustment plan prior to October 1 will actually realize $1 a bushel because the plan under existing conditions affords a bonus of 42 per cent. In other words, with 70-cent wheat farmers may until October 1 liquidate their debts to Imperial Oil in terms of $1 wheat or better.

"Should the price of wheat on October 1 this year be 70 cents or better the debtor, during the following 12 months will be credited with only $1 for each $1 paid. Also from October 1 interest will be charged on outstanding obligations at the rate of 4 per cent per annum."

SHELL MAP-BULLETIN SERVICE

A comprehensve highway map-bulletin service for motorists has been inaugurated by the Shell Petroleum Corp. in Illinois, Indiana, Michigan, Ohio, Iowa, Missouri, Wisconsin and Minnesota. This Shell feature, called "Travelaide," comprises a weekly map prominently displayed at Shell service stations showing late information on the condition of main highways of the state in which it is posted. Bridges or sections of highways under construction that are closed to traffic, detours, stretches or road recently oiled, and other information are indicated on these maps, which are 34x31 inches in size.

Collection Reports Indicate Increase in Gasoline Demand

An increase of 2.3 per cent in gasoline consumption over the same month last year is shown in the May report of this year covering gasoline tax collection by states. The American Petroleum Institute which compiled the data points out that the state reports do not always accurately reflect actual consumption due to evasion of taxes and changes in the basic laws under which the figures are collected. The Institute uses the Bureau of Mines monthly reports in all its calculations covering estimated gasoline demand.

According to the gasoline tax reports, gasoline consumption in the United States (except Tennessee) for the first five months of this year totaled 5,638,180,000 gallons, a decrease of 37,339,000 gallons, or 3.81 per cent when compared with the total for the first five months of 1932. The following report shows that 28 states and the District of Columbia had increases in gasoline consumption in May over May, 1932.

GASOLINE CONSUMPTION BY STATES, MAY, 1933 AND 1932

	Month of— May, 1933 gallons	May, 1932 gallons
Alabama	11,857,000	11,353,000
Arizona	5,710,000	5,970,000
Arkansas	10,420,000	7,392,000
California	109,747,000	113,958,000
Colorado	14,156,000	13,562,000
Connecticut	21,461,000	21,089,000
Delaware	3,554,000	3,436,000
Dist. of Columbia	9,675,000	9,493,000
Florida	17,095,000	16,415,000
Georgia	17,693,000	15,943,000
Idaho	4,460,000	4,798,000
Illinois	84,416,000	76,984,000
Indiana	40,339,000	*37,033,000
Iowa	32,809,000	29,630,000
Kansas	34,453,000	30,359,000
Kentucky	14,391,000	13,910,000
Louisiana	13,685,000	13,383,000
Maine	10,090,000	10,309,000
Maryland	17,559,000	17,342,000
Massachusetts	52,014,000	50,936,000
Michigan	68,366,000	66,902,000
Minnesota	33,919,000	32,423,000
Mississippi	9,129,000	7,329,000
Missouri	38,845,000	37,101,000
Montana	6,861,000	7,350,000
Nebraska	17,014,000	17,456,000
Nevada	1,892,000	2,111,000
New Hampshire	6,028,000	5,932,000
New Jersey	66,612,000	61,486,000
New Mexico	4,259,000	3,931,000
New York	142,760,000	142,795,000
North Carolina	21,117,000	18,883,000
North Dakota	12,955,000	10,048,000
Ohio	77,723,000	80,090,000
Oklahoma	23,513,000	20,807,000
Oregon	13,230,000	13,736,000
Pennsylvania	92,360,000	92,586,000
Rhode Island	3,243,000	3,402,000
South Carolina	9,640,000	8,540,000
South Dakota	8,965,000	10,214,000
Tennessee†	.....	.....
Texas*	63,955,000	63,173,000
Utah	4,332,000	4,453,000
Vermont	4,080,000	4,264,000
Virginia	19,399,000	20,003,000
Washington	18,757,000	24,208,000
West Virginia	11,220,000	11,567,000
Wisconsin	34,921,000	37,077,000
Wyoming	3,076,000	3,159,000
Total	1,353,416,000	1,322,966,000
Daily average	43,659,000	42,676,000
Change from previous year:		
Total change	+30,450,000	.....
Percentage change in daily average	+2.30%	.....

*Revised. †Consumption figures for Tennessee during May were not available for this publication.

REDUCE KOOLMOTOR PREMIUM

The oil marketing and refining division of Henry L. Doherty & Co. announced that effective on August 1, the premium on Koolmotor gasoline will be reduced to 2 cents. This reduction covers all Cities Service oil marketing subsidiaries in the United States.

Peter M. Speer, Retired Counsel for Socony, Dies

NEW YORK, Aug. 7.—Peter Moore Speer, for many years general counsel of the Standard Oil Co. of New York and

PETER M. SPEER

later a vice president, died Thursday night after a short illness at St. Luke's Hospital in his seventy-first year.

Mr. Speer, who retired last year, after having been instrumental in the merging of the Standard Oil Co. of New York and the Vacuum Oil Co. into the Socony Vacuum Corp., had been a member of the Pennsylvania Legislature and of the National House of Representatives, serving in the Sixty-second Congress from 1911 to 1913 from the Twenty-eighth Pennsylvania district.

He was born in Venango County, Pennsylvania, on December 29, 1862, the son of Alexander and Grizelda Hays Speer. After being graduated from Washington and Jefferson College in 1887, he engaged in the practice of law at Oil City, Pa., remaining there for a number of years.

Mr. Speer was district attorney of Venango County from 1891 to 1894. He was a member of the Pennsylvania House of Representatives for one term in 1897.

In 1918 he came to this city and became associated with his former law partner, Martin Carey, in the legal department of the Standard Oil Co. of New York. When Mr. Carey died, he was appointed general counsel and a director of the company. He remained as such until 1928, when he was appointed vice president.

MAGNETIC STORM

Tucson, Ariz., observatory of the U. S. Coast and Geodetic Survey report a severe magnetic storm started at 10 p.m. (C.S.T.) on the fifth and ended at 4 a.m. (C.S.T.) on the seventh. Its telegram follows: "Storm began fifth. Four. Severe. Ended seventh. Ten."

DEATH OF J. T. SWEENY

Joseph T. Sweeny, age 40 years, assistant general sales manager of the Phillips Petroleum Co., died Sunday in Bartlesville, Okla. He had been ill one week. Mrs. Sweeny and two children survive.

KARL C. SCHUYLER DIES

DENVER, Colo., Aug. 7.—Karl C. Schuyler died in New York City on August 2 as a result of injuries received while walking in Central Park on July 17. He was president of the Kinney-Coastal Oil Co. and a member of the American Petroleum Institute. He formerly was president of the Merritt Oil Corp., which opened and developed the Big Muddy Field in Wyoming. Last fall he was elected to the U. S. Senate to serve the unexpired term of the late Charles W. Waterman.

Late Fields

KANSAS

The Stanolind Oil & Gas Co.'s No. 1, C NW NE, Section 16-20-11w, Barton County, Kansas, set 6-inch pipe at 3,280 feet, found Siliceous lime at 3,286 feet, and drilled to 3,290 feet, where oil began to show. The hole filled 1,200 feet with oil, while the drill continued to 3,312 feet, total depth. A test was to be made.

Sinclair Prairie Oil Co.'s No. 1, NE cor., Section 18-22-3w, Harvey County, got Hunton lime at 3,339-82 feet, and Wilcox sand at 3,519-44 feet. It tested 824 bbls. in 24 hours on the swab.

J. Robertson's No. 1, SE cor., Section 31-19-9w, Rice County, was drilling at 2,995 feet. Kansas City-Lansing lime was topped at 2,890 feet. The well flowed 1 bbl. an hour from pay at 2,980-85 feet.

Derby Oil Co.'s No. 1, NE NE SE, Section 31-19-9w, Rice County, topped conglomerate at 3,234 feet and Siliceous lime at 3,238 feet, with a small show of oil. The crew will cement pipe at 3,238 feet and standardize.

Madison and others have rig up for No. 1, C SE SE NW, Section 29-20-1w, McPherson County.

Hilligoss' No. 2, C SW NE NE, Section 12-20-11w, Barton County, set 6-inch pipe at 3,275 feet and was drilling at 3,304 feet.

OKLAHOMA

E. H. Moore and others have a 12,000,000-foot gas well in their test, C SE SE SW Section 29-2-7, Pontotoc County, from the top of sand at 3,117 feet, total depth. Six-inch pipe was set at 2,972 feet. The well was shut in for orders.

The Carter Oil Co.'s No. 8 (twin to No. 4), NW NW SW Section 20-9-6, Seminole County, which started at 125 bbls. per day at 2,714-39 feet, was deepened 6 feet and made 465 bbls. the ensuing 24 hours and 623 bbls. in the second 24 hours.

In the St. Louis district, Pottawatomie County, Flesher and others' No. 1, C SW NE SW Section 3-7-4, found Hunton lime at 3,675-95 feet. It was acidized, and later flowed 150 bbls. in 24 hours. The Continental Oil Co.'s No. 5, C NE NE NW Section 19-7-4, was treated with acid at 3,865-3,948 feet (Hunton lime) and later produced 2,000 bbls. in one day. It was then shut in. It was making 80 bbls. an hour when the flow was shut off. Deep Rock Oil Co.'s No. 1, C SE NE NE Section 32-7-4, found Viola lime at 4,093 feet, dolomite at 4,171 feet and was drilled to 4,210 feet. It was plugged back to 4,208½ feet and tested on the swab, making 40 bbls. of oil and 100 bbls. of water. It was plugged to 4,205 feet and made 50 bbls. of oil and 15 bbls. of water in 24 hours. Mid-Continent Petroleum Corp.'s No. 1, C SW SW NE, Section 33-7-4, got dolomite at 4,295-97½ feet. It made 360 bbls. on the pump in 24 hours, and 315 bbls. the second day, but cut 1½ per cent.

Brown and others have cellar dug for No. 1, C SE NE SE Section 34-8-4, Pottawatomie County, and the Continental Oil Co. has made a location for No. 2 in the C NE SE SE Section 34-8-4.

SOUTHWEST TEXAS

SAN ANTONIO, Tex., Aug. 8.—C. W. Boler's No. 1 Kearney, in Bexar County, topped the Edwards at about 1,470 feet, cored to 1,472 feet with showing of oil and is setting casing.

Alamo Petroleum Co.'s No. 2 J. M. O'Brien, in the Greta Field, Refugio County, was completed flowing 40 bbls. hourly on choke. Heyser & Heard's No. 1 O'Brien, same field, in Block 6, is setting casing at 4,369 feet. William F. Morgan's No. 1 J. J. O'Brien, same field, is drilling plugs.

MONTANA

E. C. Winter, president of the Montana Reserve Oil Co., says the company's test in Carbon County, Montana, was shut down at 572 feet waiting for a rotary outfit to drill the well to the Dakota or Lakota sand, and not on government orders, as had been reported.

Gen. Johnson at Work On Revised Oil Code

(Continued from Page 10)

power, and it is its duty to see that that commerce is equitable and just between all citizens.

"The matter of attempting to regulate state and Federal Government jointly will never succeed, any more than it did succeed in the Eighteenth Amendment. Either it must be all Federal Government and Federal contro', or all must be state."

"I want to emphasize again," he said, "I see no distinction between fixing the hours and cost of labor and leaving out the cost of production. They go hand in hand."

Wirt Franklin wanted a curb put on excessive drilling on small locations such as a 10-acre location. He said there was no state law to take care of such cases but if the limitation were put in this oil code it would serve a very useful purpose.

Mr. Atwood, representing the governor of New Mexico, said his state was concerned with the matter of allocations and allowables.

"We do not desire to offer any amendment to the provision with reference to allocation of allowables by the President," said Mr. Atwood, "if it be understood that there will be no action taken along that line which might affect a state's interests, without first giving the opportunity to the governor and the regulatory bodies of that state to be heard. I assume that that will be done.

"We would like to see some assurance in this code that there will be a power and a declaration of policy that price discrimination will be inquired into, because price discrimination is the worst form of unfair competition. We would like to see that."

Wyoming Prices

Mr. Foley came forward as the representative of the governor of Wyoming to ask that in the zoning of the oil fields there should be a separate zone known as the Rocky Mountain district and that district should in no way be compared with the Mid-Continent quoted prices.

"In other words," he said, "we should be in the same relation to the oil industry that California is. They prorate, as I understand it, to the extent of their requirements, of their refinery and of their market, and as a result of that they are getting a better rate and better price for their crude. We insist on a similar zoning in Wyoming.

"A lot has been said during the week about price fixing. The hours of labor and basic rates of pay have been established in this proposed code. That in itself is price fixing. It is very easy for the operator in the State of Wyoming to concur and accept any rate or the number of hours that should be established for labor and certainly I agree that the rate and hours established here are as they should be, but unless there is some fixed price for crude oil, a minimum price, and a maximum price for the products of crude oil, the additional price will be thrown back onto the producer by merely cutting the price for crude oil, and that is what we want to get away from."

Mr. Foley read a telegram from Governor Leslie A. Miller of Wyoming who protested against the practice of basing Wyoming prices on prices in the Mid-Continent.

"Wyoming prices," he said, " should be based upon Wyoming production and needs of Wyoming refiners also upon sale prices of refined products including road and fuel oil. I earnestly request you to urge adoption in code of uniform system of accounting to assure the Government immediate detailed information on prices of crude at all refineries together with refinery prices of all refined products. Adoption of such system giving this definite information will provide opportunity for price recovery for crude in this district which will insure fair returns to operators and protect tax values to state. Present Wyoming views fully to conference and deliver copy of this telegram to General Johnson."

Wirt Franklin's Protest

Wirt Franklin made plain that the Independent Petroleum Association of America could not agree to the code in its modified forms as presented by the administrator. The Committee of 54 could not agree to this code, he said.

"We cannot agree to a code which does not give us that adequate protection which we think necessary," said Mr. Franklin. "We cannot agree to this modified code.

"It is useless to attempt, through any coercive measures, to bring these men into an agreement. They will not agree to the changes or the omissions which the code as submitted by the administrator the other night accomplishes.

"The provisions—one of the most cardinal provisions—which is insisted be included in the code is some formula for a minimum price for crude petroleum based upon the recovery cost found to be economically practicable. They are willing to modify the price regulation clause in the section of the code to that extent.

"We have been told that this was to be a self-governing industry, that the representatives duly chosen by the industry could represent that industry. And the plan which has been submitted entirely does away with that. And the men elected by 97 associations at Chicago to represent the industry in its contact with the Government under that provision it entirely ignores.

"The sense of the meeting last night was that we will keep our Committee of 54 intact, regardless of action on the code, as the only representative body selected by the industry in its contact with the Government."

Mr. Sutro's Plain Words

Oscar Sutro, vice president of the Standard Oil Co. of California, said those he represented came to Washington to get a code but he said this code increases the burdens of the industry.

"In my view," he said, "the oil industry of the United States stands at this moment in a greater state of demoralization than it has at any time because of overproduction and we say it is your duty to remedy that."

"The true reason in my humble judgment why the price question has been avoided," said Mr. Sutro, "is not the difficulty of enforcing it, not the question of its constitutionality, because to my mind this act is practically unassailable, not the fact that when you balance production and demand—and you heard that discussed last night and know how far that will go—but because there is a school of thought that opposes government interference in business, and that school of thought I say is not representative of the President's views.

"If you do not give us price regulations, you can make codes from now to doomsday and you will get nowhere," this last remark calling forth great applause.

The governor of Michigan, William A. Comstock, presented his views on price fixing in the form of a telegram in which he said success would be insured for the code if it would prohibit the sale of oil and products below cost of production.

The governor of Louisiana, O. K. Allen, telegraphed saying the price structure of crude should be raised to induce the operation of 300,000 oil wells in the United States.

H. F. Sinclair's Statement

Harry F. Sinclair, chairman of the executive committee of the Consolidated Oil Corp. and chairman of the special committee reporting new labor provisions for the Chicago code for the National Emergency Committee of 54, says that anyone who signs an oil industries code without price regulation in it "might just as well sign a bankruptcy petition."

Mr. Sinclair added: "There is nothing in it that would enable the industry to meet an increased pay bill of $1,000,000 a day. About all that can be said for it is that it conforms to the law of the survival of the richest."

Investigation Condemns Proposed Fuel Blends

(Continued from Page 31)

production, in large quantities, of a cheap by-product of alcohol manufacture, corn oil.

It was estimated that the manufacturers of gasoline, despite the higher price at which blended fuels must be sold and the increase in consumption resulting from use of fuels with lower efficiency than gasoline, would share the loss side of the ledger with the farmers. Estimated losses of $40,000,000 through displacement of gasoline by alcohol and of $80,000,000 more through additional costs of blending and of installing blending and other equipment, were seen. Still greater losses were predicted for the gasoline business through added costs of refining and the competition of price-cutting gasoline bootleggers and tax evaders whose field of operation greatly would be expanded.

The report said that the alcohol industry stood to gain, its increased income being estimated at $267,200,000, through the production of 800,000,000 gallons of alcohol needed for a 5 per cent blend. No attempt was made to estimate the cost of erecting new plants or expanding present plants to provide the necessary 622,000,000 gallons additional capacity, nor the cost of converting plants now equipped to manufacture alcohol from the cheaper molasses. A sizeable increase in revenue for transportation agencies, such as the railroads, was predicted.

Economic Effects

It was explained that the study carefully avoided the chemical and physical phases of the proposal, but tried rather to "bring into the picture each factor of importance relating to the principal industries involved, and as far as possible to express the results to be expected in terms of dollars." The economic effects of the fuel blend-farm relief plan upon various groups were summarized as follows:

"1. Financial benefit to corn farmers would be questionable unless a substantial percentage of alcohol is required. Most other farmers will actually suffer cash losses.

"2. Motoring public would pay an appreciably and definitely higher price per gallon for motor fuel, totaling more than the farmers would gain through increased corn prices.

"3. Oil companies would suffer definite losses through decreased volume and increased cost of operation.

"4. Alcohol companies would benefit decidedly unless 'the new deal' leads the Government to enter the alcohol business or to control price of alcohol at non-profit levels.

"5. Railroad and other transportation agencies would gain through increased tonnage of gasoline.

"6. Government expenditures would be definitely increased through:

"(a) Enlarged inspection service.

"(b) Probable necessity of financing the building of new plants if substantial percentage of alcohol is required. Revenue from taxation is disregarded as Government has power to impose this anyway."

The report held the consideration of the matters of economics and interindustry competition to be highly important, pointing out that this plan definitely and deliberately would take away a portion of the petroleum industry's market and turn it over to the alcohol industry.

"Before we thus handicap the domestic industry for the benefit of another directly competing domestic industry," the report asserted, "we should, as a matter of public policy, consider the precedent thus set.

"If such a policy is adopted in any particular case, it opens the doors for a tremendous amount of 'class' legislation. If a law is passed to require a part of the petroleum market to be given to the alcohol industry, it means that the lumber industry is justified in asking that it be given a definite share of the steel industry and that the cotton textile people could logically ask that women be required to buy a given proportion of stockings made from cotton instead of rayon.

"It has been an American policy to have each domestic industry stand upon its own feet . . . In relation to the proposal to force petroleum companies to buy a given percentage of alcohol, it seems as if no one expects the alcohol blend to stand on its own feet . . . A clear-cut distinction should be recognized between legislation designed to relieve a large group of our people when the expense of such relief falls on everybody in the country, and relief measures that fall heavily upon a competing industry.

"There can be little doubt that a new outlet must be found for surplus agricultural products, or production must be reduced. Congress gave President Roosevelt and Secretary Wallace power to reduce production, thus making it possible to correct the situation by that means. It would be more desirable if new uses could be developed which would enable the farmer to keep his production at the present high level without penalizing another domestic industry which, so far, is supplying motor fuel at lower prices than consumers are paying anywhere else in the world.

"It would be more sound from the standpoint of the farmers if a new use could be found for corn and other agricultural products which would not act as a boomerang and cost the farmer more than he would get out of it. To substitute alcohol for gasoline means that the farmers must pay an excessive amount for his motor fuel, and since this added cost would be greater than the benefits to be received from increased prices for his products, the proposal is not a healthy one from the standpoint of farmers in general."

Crude Oil Prices

(Continued from Page 23)

PURE OIL CO.
(Effective July 26, 1933)

Cabin Creek, W. Va.	$1.62
Bradford Hollow, W. Va.	1.62

TIDE WATER PIPE CO.
(Effective July 26, 1933)

Bradford, Pa.	$2.00
Allegany, N. Y.	2.00

Rocky Mountain States

Iles, light (July 8, 1933)	$.50
Iles, heavy (July 8, 1933)	.44
Florence, Colo. (June 17, 1933)	.20
Fort Collins and Wellington, Colo. (June 17)	(See Salt Creek prices)
Cat Creek, Mont. (June 17, 1933)	.62
Big Muddy (July 8, 1933)†	.55
Frannie, light (July 8, 1933)	.41
Frannie, heavy (July 8, 1933)	.30
Salt Creek and La Barge (July 8, 1933)	See Stanolind Mid-Continent price schedule
Grass Creek, light (July 8, 1933)	.73
Grass Creek, heavy (Dec. 16, 1932)	.45
Elk Basin (July 8, 1933)	.73
Rock Creek (July 8, 1933)†	.54
Dutton Creek (July 8, 1933)	See Mid-Continent gravity prices.
Lance Creek (Dec. 16, 1932)	.93
Poison Spider (Mar. 6, 1931)	.70
Hudson (June 3, 1931)	.65
Lander (Mar. 5, 1931)	.40
Rex Lake (Feb. 22, 1930)	1.10
Osage (Jan. 18, 1933)	.53
Lost Soldier (July 8, 1933)	.42
Hamilton Dome (Dec. 16, 1932)	.35
Torchlight (July 8, 1933)	.73
Greybull (July 8, 1933)	.73
Pondera (June 17, 1933)	.75
Sunburst (July 8, 1933)	.90
Hogback, N. Mex. (July 8, 1933)	.75
Lea County, N. Mex. (See Note)	.90
Maljamar (June 19, 1933)	.35
Artesia-Jackson (July 11, 1933)	.45

Note—Salt Creek, Cat Creek, Dry Creek, Dallas-Derby, Hudson, Greybull, Hogback, and Iles by Stanolind Oil & Gas Co. and remainder by Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin. Lost Soldier posted by Producers & Refiners Corp. Artesia, Jackson and Maljamar posted by Continental Oil Co. Lea County, effective June 19, by all purchasers; Fort Collins, Wellington, Orchard, Florence, Big Muddy, Cat Creek, Rattlesnake and Table Mesa by Continental Oil Co. Osage posted by Arro.

*Continental Oil Co. †Ohio Oil Co.

Middle Western States

OHIO OIL CO.
(Effective August 1, 1933)

Lima	$.85
Illinois	.77
Princeton, Ind.	.77
Plymouth	Shut in
Western Kentucky	.72
Midland, Mich. (Aug. 7, 1933)*	.80
Somerset, Ky. (Aug. 4, 1933)	.77
Hart County, Ky. (Aug. 4, 1933)	.85
Muskegon, Mich. (Mar. 27)	See note

*Posted by Pure Oil Co. Producers Pipe Line Co. pays 5 cents per barrel over Pure Oil Co.'s posted price. Muskegon: All companies pay $1 per barrel effective March 27. Somerset, Ky., crude purchased by Ashland Refining Co., Ashland, Ky., and posted price includes premium. Hart County, Kentucky, crude purchased by Stoll Refining Co.

Canada

Ontario (Jan. 18, 1933):	
Petrolia*	$1.75
Oil Springs*	1.89
Turner Valley†:	
Crude oil, 31°-35.9° (Jan. 24, 1933)	1.41
Crude oil, 36°-49.9° (Jan. 24, 1933)	1.90
Crude oil, 50° up (Jan. 24, 1933)	2.41
Discolored naphtha (Jan. 24, 1933)	1.89
Crude naphtha (Jan. 24, 1933)	1.89

*Imperial Oil, Ltd. †Imperial Oil, Ltd., and Regal Oil & Refining Co.

Mexico

Panuco*	$0.432

*F.o.b. ship, based on June transactions and exclusive of production and export taxes and bar dues.

California Crude Oil Prices

STANDARD OIL CO. OF CALIFORNIA
(Effective June 26, 1933)

For current purchases of crude oil at the well (unless otherwise specified). (All gravities above those quoted take highest price offered in that field.

	Signal Hill	Seal Beach, Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey*	Olinda-Brea Canyon	Athens, Rosecrans, Dominguez	Torrance	Richfield	Whittier, La Habra	Montebello	Coyote Hills	Santa Fe Springs	Midway-Sunset, Elk Hills, Buena Vista Hills	Lost Hills	Coalinga
14-14.9	$0.55	$0.55	$0.55	$0.55	$0.55	$0.55	...	$0.55	$0.55	$0.55	$0.55	$0.55	...	$0.52	$0.52	$0.52
15-15.9	.55	.55	.58	.53	.55	.58	...	.55	.55	.55	.55	.55	...	.52	.52	.52
16-16.9	.55	.55	.60	.61	.58	.61	...	.57	.55	.57	.55	.55	...	.52	.52	.52
17-17.9	.57	.55	.63	.64	.61	.64	...	.60	.59	.60	.55	.57	...	.52	.53	.52
18-18.9	.60	.56	.65	.67	.64	.67	...	.62	.62	.62	.55	.60	...	.52	.56	.52
19-19.9	.63	.60	.68	.70	.67	.69	...	.65	.66	.65	.55	.63	...	.54	.59	.53
20-20.9	.66	.63	.71	.73	.70	.72	...	.68	.69	.68	.55	.65	...	.57	.62	.53
21-21.9	.69	.67	.73	.77	.73	.75	...	.70	.72	.71	.58	.68	$0.60	.61	.65	.56
22-22.9	.71	.70	.76	.80	.76	.77	...	.71	.75	.74	.60	.71	.64	.65	.68	.59
23-23.9	.74	.73	.78	.83	.79	.80	$0.68	.75	.78	.76	.64	.73	.67	.69	.70	.61
24-24.9	.77	.77	.81	.86	.82	.83	.71	.78	.82	.79	.67	.76	.70	.72	.73	.64
25-25.9	.80	.80	.83	...	.85	.85	.75	.80	.85	...	.71	.79	.73	.76	.76	.67
26-26.9	.82	.83	.86	...	.88	.88	.79	.83	.88	...	.75	.82	.76	.80	.79	...
27-27.9	.85	.87	.88	...	...	.91	.82	...	.92	...	...	.84	.80	.83	.81	...
28-28.9	.88	.90	.91	...	...	.94	.86	...	.95	...	...	.87	.83	.87	.84	...
29-29.9	.90	.93	.93	...	...	...	.89	...	.98	...	...	.90	.86	.91	.87	...
30-30.9	.93	.97	.96	...	...	...	.93	...	...	...	...	.93	.89	.95	.89	...
31-31.9	...	...	...	...	...	...	.97	...	...	...	...	.95	.92	.98	...	...
32-32.9	...	...	...	...	...	...	1.00	...	...	...	...	.98	.96	1.02	...	...
33-33.9	...	...	...	...	...	...	...	...	...	...	...	1.01	.99	1.06	...	...
34-34.9	...	...	...	...	...	...	...	...	...	...	...	1.03	1.03	...	...	...
35-35.9	...	...	...	...	...	...	...	...	...	...	...	...	1.05	...	...	...
36-36.9	...	...	...	...	...	...	...	...	...	...	...	...	1.08	...	...	...
37-37.9	...	...	...	...	...	...	...	...	...	...	...	...	1.11	...	...	...
38-38.9	...	...	...	...	...	...	...	...	...	...	...	...	1.14	...	...	...

Elwood—F.o.b. ship, 33-33.9 degrees, 91 cents; 34-34.9, 94 cents; 35-35.9, 97 cents; 36-36.9, $1; 37 degrees and over, $1.03.

Kettleman Hills—33-33.9 degrees, 76 cents; 34-34.9, 78 cents; 35-35.9, 80 cents; 36-36.9, 82 cents; 37-37.9, 84 cents; 38-38.9, 86 cents; 39 degrees and over, 88 cents.

Newhall, McKittrick and Kern River—14 degrees to 19 degrees and over, 52 cents.

Wheeler Ridge—14 to 20.9 degrees, 52 cents; 21-21.9, 55 cents; 22-22.9, 57 cents; 23-23.9, 60 cents; 24-24.9, 63 cents; 25 degrees and over, 66 cents.

The Union Oil Co. met all Standard Oil Co. of California prices in fields where both companies purchase, and posted as follows in East Coyote: 14 to 15.9 degrees, 55 cents; 16-16.9, 57 cents; 17-17.9, 60 cents; 18-18.9, 62 cents; 19-19.9, 65 cents; 20-20.9, 68 cents; 21-21.9, 71 cents; 22-22.9, 74 cents; 23-23.9, 76 cents; 24 degrees and over, 79 cents. Santa Paula, 14 to 18.9 degrees, 55 cents; 19-19.9, 57 cents; 20-20.9, 60 cents; 21-21.9, 62 cents; 22-22.9, 65 cents; 23-23.9, 67 cents; 24-24.9, 70 cents; 25-25.9, 72 cents; 26-26.9, 75 cents; 27-27.9, 77 cents; 28-28.9, 80 cents; 29-29.9, 83 cents; 30 degrees and over, 85 cents. Orcutt, 14 to 18.9 degrees, 52 cents; 19-19.9, 54 cents; 20-20.9, 57 cents; 21-21.9, 61 cents; 22-22.9, 65 cents; 23-23.9, 69 cents; 24-24.9, 72 cents; 25-25.9, 76 cents; 26 degrees and over, 80 cents. Lost Hills and Belridge schedule same as that of the Standard Oil Co. of California in Lost Hills; Mount Poso, Kern River, McKittrick schedule same as Standard's Newhall, McKittrick and Kern River schedule except that Union Oil Co. posts 47 cents for 11 to 13.9 degrees, inclusive. Union Oil Co.'s schedule also posts 47 cents per barrel for 11 to 13.9 gravity in Coalinga, Midway-Sunset, Elk Hills and Buena Vista Hills.

Texas Co. effective June 26, 1933, met Standard Oil Co. of California prices in Signal Hill, Alamitos Heights, Huntington Beach, Torrance, Richfield, Montebello-North Whittier, Santa Fe Springs, and pays following prices in Shiells Canyon, South Mountain and Santa Paula: 14 to 18.9 degrees, 55 cents; 19-19.9, 57 cents; 20-20.9, 60 cents; 21-21.9, 62 cents; 22-22.9, 65 cents; 23-23.9, 67 cents; 24-24.9, 70 cents; 25-25.9, 72 cents; 26-26.9, 75 cents; 27-27.9, 77 cents; 28-28.9, 80 cents; 29-29.9, 83 cents; 30 gravity and over 85 cents.

Associated Oil Co., effective June 26, 1933, adopted Standard Oil Co. of California's prices with a few reservations in the upper brackets. In Huntington Beach the highest price is 86 cents for 25 degrees and over. In Seal Beach and Alamitos Heights, top price is 83 cents for 26 degrees and over; Coyote Hills, top price is 73 cents for 22 degrees and over. In Richfield, top price is 85 cents for 25 degrees and over; Torrance, top price is 80 cents for 25 degrees and over; Santa Fe Springs, top price is $1.05 for 35 degrees and over; Midway-Sunset, Elk Hills and Buena Vista Hills, top price is 95 cents for 30 degrees and over; the Associated Oil Co. also posts 47 cents per barrel for 11 to 13.9 gravity oil in McKittrick, Kern Front, Kern River, Midway-Sunset, Elk Hills, Buena Vista Hills and Coalinga.

General Petroleum Co., effective June 26, 1933, posted same prices as Standard Oil Co. of California with some reservations in the upper grades in some fields and in lower grades in one field: Midway-Sunset, top price is 95 cents for 30 degrees and over; Alamitos Heights, top price of 83 cents for 26 degrees and over; Santa Fe Springs, bottom price of 70 cents for 24-24.9; Richfield, top price of 85 cents for 25 degrees and over; Brea Canyon, Olinda, top price of 85 cents for 25 degrees and over; Torrance, top price of 80 cents for 25 degrees and over.

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Used 4-Inch Line Pipe—

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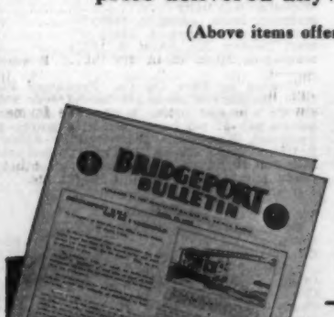

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Formulas for Calculating Weight of Drilling Mud and Application of Gas Cutting Theory

By E. J. MAUST
Development Engineer, The Dorr Co., Inc.

Gas cutting of drill mud is one of the most serious problems in regard to mud handling that is encountered in the rotary method of drilling an oil well. The effect of gas on the mud will generally exist when drilling through a gas-bearing strata.

It seems that much of the trouble due to gas cutting can be solved simply by a proper conception of the problem involved. When we consider that gas must be removed from the hole the same as any other product of the cutting action of the bit, it becomes largely a problem of considering the best way in which to remove this gas from the mud when it arrives on the surface. When drilling through a formation holding gas it is inevitable that the liquefied gas associated with the cuttings in the hole must be removed. Simple calculations show that there is sufficient gas released with the cuttings removed in drilling the hole to account for a complete condition of gas cutting. With one circulation a normal mud entering the hole at 85 pounds per cubic foot or 11.3 pounds per gallon may come to the surface with a weight less than that of water.

In this consideration it is assumed that all of the gas exists in the formation as liquefied gas. According to F. W. Lake it is considered that the greater portion of the gas exists either in the liquefied condition, adsorbed, or in solution with the heavier hydrocarbons. This is especially true at considerable depth with heavy formation pressures. For the purposes of illustration in this connection it is assumed that all of the gas exists in the liquefied state.

The amount of liquefied gas that must be removed and the rate at which it is removed depends upon a number of different factors. The amount present depends upon the nature of the gas formation that is being penetrated. According to Walter H. Jeffrey there may be as much as 40 per cent voids in the loose and unconsolidated sands of California. He gives as a conservative estimate that unconsolidated sands and gravels will have 30 per cent voids, soft sandstone 20 per cent, and hard sandstone 15 per cent. The degree A.P.I. of the liquefied gas and the temperature of the gas upon being released from the hole at the surface determines the volume there.

The rate at which gas is released with the cutings depends upon the diameter of the bit and the rate of drilling, and upon whether the formation is so loose and unconsolidated that a portion caves into the hole before the mud fluid has time to seal it up. The rate at which gas is removed from the hole is further controlled by the pumping rate for the mud fluid.

In the further consideration of the problem of gas cutting, based entirely upon the association of liquefied gas with the cuttings, it is assumed that 1 gallon of the liquefied gas in the formations will produce 30 feet of free gas at the surface at 100° F. This volume of gas is taken for an assumed liquefied vapor at 90° A.P.I. at 60° F. The volume varies from 18 feet at 45° A.P.I. to 41 feet at 150° A.P.I., the vapor at 100° F. These values are obtained from the U. S. Bureau of Standards, Miscellaneout Publications No. 97.

Calculations of Mud Weight Reduction Due to Gas

The rate at which gas is brought to the surface in a normal drilling operation is expressed in the following formula:

$$V = \frac{A \times R \times Z \times 30 \times 7.98}{60}, \text{ where (1)}$$

V = volume of gas at the surface in cubic feet per minute.
A = area of hole or bit in square feet.
R = drilling rate in feet per hour.
Z = per cent voids in the formation.
30 cubic feet = volume occupied at surface by 1 gallon liquefied gas at 100° F.

The gas enters the mud stream as rapidly as it is released in the hole. The rapidity with which it is brought to the surface depends upon the pump rate. Hence the reduction in the initial weight of the mud after making one complete circulation through the hole is affected by the pump rate or flow of mud.

Assuming that all of the gas collected from the cuttings in the hole remain in the mud after being brought to the surface, we can readily calculate the reduced weight of the mud due to the gas present.

The weight of the mud for one complete circulation cycle is shown in the following formula:

$$W_g = \frac{PW - VW}{P}, \text{ where (2)}$$

W_g = weight in pounds per cubic foot of the mud as discharged from the hole with the collected gas.
P = pump rate in cubic feet per minute.
W = initial weight in pounds per cubic foot of mud entering the hole.
V = rate of releasing the gas in the hole, expressed as cubic feet per minute at the surface.

Formulas (1) and (2) can be combined so as to express directly the mud weight obtained from an initial mud weight entering the hole after one circulation, combining all of the variables. The formula below expresses this:

$$W_g = \frac{PW - W(A \times R \times Z \times 3.74)}{P} \text{ (3)}$$

using the same definitions as in (1) and (2).

An illustration of the weight to which a mud is reduced for a given set of conditions is shown in the following example. Assume that the drilling is accomplished with a 12¾-inch bit, that the rate of drilling is 5 feet per hour through a sand containing 20 per cent voids, and that the initial weight of mud entering the hole is 80 pounds per cubic foot (10.7 pounds per gallon), the pump rate being 300 g.p.m., or 40 cubic feet per minute.

From Formula (3) we find that the returned mud after one circulation has a weight of 70.95 pounds per cubic foot (9.48 pounds per gallon).

Using this formula tables have been calculated showing mud weight reduction under different conditions of drilling. Calculations were made by slide rule.

From these tables it can be seen that even a very heavily weighted mud, 100 pounds per cubic foot, may become gas cut readily without any gas whatsoever entering the mud from the formations. Assuming that none of the gas entering the mud leaves it on the surface, the time that a mud can be used before it reaches the weight of water can be obtained from these tables.

Table 1

Drilling rates in feet per hour at which rotary mud will be lightened to weight of water (62.5 pounds per cubic foot) in one circulation.

Bit size 12¾ inches.

Original wt. of mud, lbs./cu. ft.	Pump circulation — 400 G.P.M.		300 G.P.M.	
Voids—	20%	40%	20%	40%
100	....	11.2	....	8.2
90	....	9.0	13.3	6.7
80	13.0	6.5	9.4	4.7
76	10 5	5.3	7.7	3.8
72	7.7	4.0	5.7	2.9

Table 2

Number of times mud can be circulated with a drilling rate of 6 feet per hour before it is lightened to the weight of water (62.5 pounds per cubic foot).

Bit size 7⅞ inches.

Original wt. of mud, lbs./cu. ft.	Pump circulation — 400 G.P.M.		300 G.P.M.	
Voids—	20%	40%	20%	40%
100	15.4	6.8	10.1	5.0
90	11.0	5.3	8.1	4.0
80	8.0	4.0	5.8	2.9
76	6.4	3.2	4.7	2.3
72	5.0	2.4	3.4	1.8

Practical Application of Gas Cutting Theory

When looked at in the light of removing liquid gas from the hole as any other material that should be removed such as sand or shale the problem resolves into one of having the mud in the best shape to release the gas as rapidly as it is brought to the surface.

As it is impossible to gas cut water it would therefore appear that pure water would be the best drilling fluid from the standpoint of releasing gas at the surface. Water, however, would not provide the material necessary to seal off the gas formations. The best compromise therefore is to use a mud having extremely low viscosity characteristics. This does not necessarily mean that a very low density of light weight mud should be used, as the mud weight must always be such that the hydrostatic head on the formation will be sufficient to overcome the reservoir pressure of the formations.

The tendency in many oil fields is to use as heavy a mud as it is possible to make up from available mud supplies as soon as gas is encountered. This means that the mud as well as being as heavy as it is possible to make it without the use of weighting agents is also very viscous. Many oil field operators and drillers are accustomed to refer to very viscous mud as being "heavy," confusing the two independent properties of the mud. As a very viscous mud is very readily gas cut and tends to hold gas when brought to the surface, the use of viscous mud is the worst possible procedure in many cases. As the change between nonviscous and very viscous mud usually represents only about 8 to 10 pounds per cubic foot difference in weight, it is highly improbable that this difference in weight of mud is very often responsible for the difference in hydrostatic head necessary to hold gas in the formations. At 6,000 feet depth the hydrostatic head with 80-pound mud is 3,330 pounds per square inch, while the head with 72-pound mud is 3,000 pounds per square inch. This difference in weight of mud may represent a viscosity increase from 5 centipoise at 72 pounds to 40 centipoise at 80 pounds. It is entirely possible that there may be cases where this difference in hydrostatic head would be the balance between the hole blowing out and holding back the gas, but the chances that this is often the case are very rare. The viscous 80-pound mud will gas cut quite readily and will not easily release its gas when brought to the surface, while the nonviscous 72-pound mud will generally allow the entrapped gas to bubble out when brought to the surface.

With this thought in mind it therefore would appear desirable to charge the mud circulation system with very thin and nonviscous mud as soon as gas is encountered, rather than to charge it with the heavy and viscous mud normally used for gas conditions.

A thin nonviscous mud will seal off gas formations as readily as a viscous mud. Under the very great hydrostatic pressures at the bottom of the hole we have an exaggerated pressure filter so that a mud wall is quickly and readily formed wherever there is a differential pressure and where there is pore space for the water to leave the mud in forming the cake. In actual tests with a sand core at 2,000 pounds per square inch pressure it was found that a 70-pound mud having a viscosity of 2 centipoise formed a mud wall of 4 m.m. in 30 minutes, whereas a 78-pound mud having a viscosity of 2.4 centipose formed an 8 m.m. cake in the same period of time. As the sand core had about 45 per cent voids in this test case an exaggerated problem of sealing off of the sand was presented.

Use of Admixtures

When the gas pressure requires the use of very heavy mud fluid, especially when high pressure gas is encountered at shallow depths, this weight should be obtained from extremely finely ground weighting agents, keeping the mud viscosity at a very low point—under 5 centipoise. There is very little tendency for weighting agents that are ground to semicolloidal fineness to segregate out in the hole in a nonviscous mud. Should a twist off occur while using this nonviscous mud the fluid could readily be displaced with a more viscous mud to prevent any possibility of sand or weighting agent settling out and sticking the drill pipe. Admixtures have their proper place in the treating of mud. The thought is that they should be handled more intelligently when needed.

When the problem of gas cutting is looked at in the light of removing liquefied gas with the cuttings, the explanation of the term "mudding off the gas" may mean that the circulation is simply progressing to the point where all of the liquefied gas has been removed from the hole, rather than actually sealing off the gaseous formation. As the filtration of a mud wall on a porous formation is almost instantaneous in providing a thin film, the sealing off is very rapid. If there is sufficient pressure differential between the mud column and the formation pressure, then as the mud wall is formed water will leave the mud that makes up the mud wall and enter the formations, forcing the liquid gas back. As a thin mud will penetrate slightly further than a viscous mud, the sealing off of a gaseous formation should be expedited by the use of the thin nonviscous mud. Where the formation is so open that any material quantity of mud enters as would be shown by a loss of mud in circulation, then the problem assumes different proportions and a special agent such as bentonite should be used.

It is believed that a study of the possibilities of solving gas cutting by the means of using a nonviscous fluid from which the gas can readily bubble out of will be well justified and show some economies possible in mud costs.

Yount Lee Test Breaks Gulf Coast Depth Record With Remarkable Equipment Performance

By NEIL WILLIAMS
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Aug. 7.—Yount Lee Oil Co. of Beaumont, Tex., is drilling a deep wildcat in the extreme southern part of Liberty County, Gulf Coast, which is of special interest in many ways to operators not only on the coast but also in other districts. First, it is the deepest hole ever drilled on the Gulf Coast; second, it is located in rank wildcat territory where not only the lower horizons are being explored but also, if production is found, an entirely new field will be opened; and, third, it has been a test of the ability and experience of that company in deep drilling and also of equipment and materials.

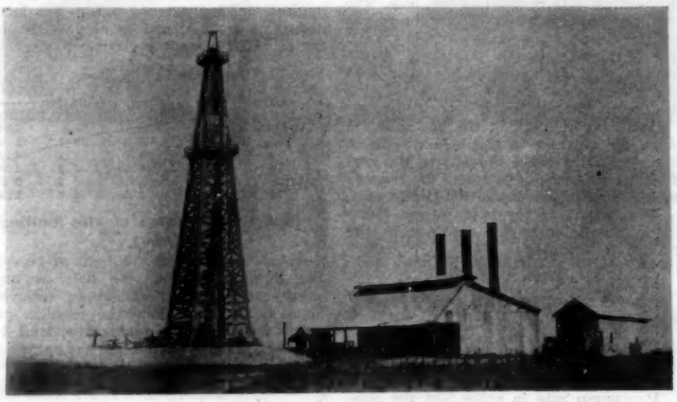
Although short of depth records which have been set in other parts of the country, particularly in California, the Yount Lee test probably is the deepest which has ever been put down with the same comparative size equipment. In the drilling of the test and the setting in it of the longest string of 7⅝-inch casing ever run on the Gulf Coast, only the standard equipment and materials ordinarily used on holes to depths of not more than 7,500 feet were employed.

This test, No. 1 Boyt, H.&T.C. Survey No. 17, located on a very deeply seated salt dome prospect owned entirely by Yount Lee Oil Co., now is well below 9,400 feet. It breaks the depth record for the Gulf Coast which has been held only a short time by the same company's No. 1 Plummer, a little over a mile southeast, which was abandoned earlier this year at a total depth of 9,344 feet. These are the only two tests which have been drilled on this prospect. Only two other tests on the Gulf Coast have been drilled below 9,000 feet, those being Union Sulphur Co.'s No. 762 fee at Sulphur, which went to 9,250 feet, and Edwin M. Jones' No. 1-B Mitchell with bottom at 9,131 feet.

Equipment Achievement

The fact that the two Yount Lee tests have been drilled to their respective depths of 9,344 feet and 9,500 feet, totaling more than 18,844 feet, with hardly a hitch, speaks credit to the company and the drilling crews on the job, and the fact that every piece of equipment, generally considered light for such depths, withstood the extra requirements placed upon it, is a demonstration of what can be done with modern oil field machinery and materials. For the most part the same pieces of equipment, from the derrick down, have been used throughout the drilling of both these two tests although intended by manufacturers for much less service.

To Yount Lee Oil Co., however, the drilling of deep holes is nothing new. Although only these two have gone below the 9,000-foot level, the company has several 8,000-foot and quite a few 7,000-foot holes on its list, and it probably can be stated with safety that this company has drilled more tests to various depths below 7,000 feet than any two other coastal companies together. M. Frank Yount, the president and direct guiding hand of the company, is the pioneer deep driller on the coast. It was he, who at Sour Lake in 1913, brought in the first flank sand production on any salt dome and started a new era of coastal development. Some years later, following the organization of his company, he discovered the prolific deep sands of Spindletop, and since then the company has directed its efforts toward the exploration of lower and lower horizons all over the district.



Yount Lee Oil Co.'s No. 1 Boyt, Southern Liberty County, Texas, deepest test on the Gulf Coast

Characteristic of Yount Lee Oil Co.'s operations is the standardization of size and type of equipment on most all its wells, and whether a test must go to 4,000 feet or 9,000 feet makes little difference as all are outfitted virtually the same. In fact, the company seldom starts drilling with a depth limit but anticipates going the limit in every hole unless production is found. For this reason the equipment on these two deep tests has not been essentially different or heavier than that used on any other tests drilled by the company.

The real test of the equipment and of the ability of the company in the putting down of these holes came during the setting of the 9,155-foot string of 7⅝-inch O.D. casing, the longest pipe ever set in any Gulf coastal well. This casing which was supplied by Jones & Laughlin Steel Corp. of Pittsburgh, consisted of 5,155 feet of special external upset and 4,000 feet of regular pipe, the latter being on bottom. Being of 26.75 pound material, its total weight was 244,896.25 pounds, a tremendous load for any outfit.

The casing was run through Mission slips, manufactured by Mission Manufacturing Co. of Houston. These 7-inch slips performed the job without an accident or miss of any kind. It also might be stated that Mission rotary slips also were used during the drilling not only of the Boyt test but also part time on the first, and in a total of more than 10,600 feet of hole not a single joint of drill pipe was lost because of slip cutting.

The 118-foot Long Leaf Yellow Pine wooden derrick provided ample facilities for the handling of the casing as well as for the drilling of the hole although it is somewhat smaller than the customary derricks used on the coast even for much shallower tests. The derrick was windlegged and sway-braced to provide additional strength and there was not a single sag or break in it despite the exceptional strain. The rig and derrick were called upon to do an unexpected job in the pulling and rerunning of approximately 7,500 feet of pipe. This was made necessary when the casing became stuck after being run to that depth. This was the only hitch in the whole procedure but on the second attempt to get the pipe in it went down without difficulty.

Crew Deserves Credit

In view of the fact that only a 9⅞-inch hole had been drilled, which had left only a very small clearance for the 7⅝-inch pipe, the crew deserves considerable credit for having no more trouble than it did. The job also is an indication of the straightness of the hole which was recorded by Martin-Decker weight indicators and surveyed by a Sperry-Sun Syfo unit.

A remarkable bit of vital service was performed in the setting of the casing, as well as in the drilling of the hole, by the Leschen drilling line. The same 1-inch line was used in setting the casing, including the running and pulling of the first 7,500 feet and the rerunning of the entire 9,155 feet, and in making 10 round trips with 3-inch drill pipe in drilling from 9,200 feet to 9,300 feet. The line was strung in eight lines through a four-sheave, straight line crown block and a 72-inch 4-sheave traveling block, both manufactured by the Beaumont Iron Works. Gilbert Prince, superintendent for the Yount Lee Oil Co., says eight lines can be strung through a 4-sheave block by anchoring the dead end to the crown block.

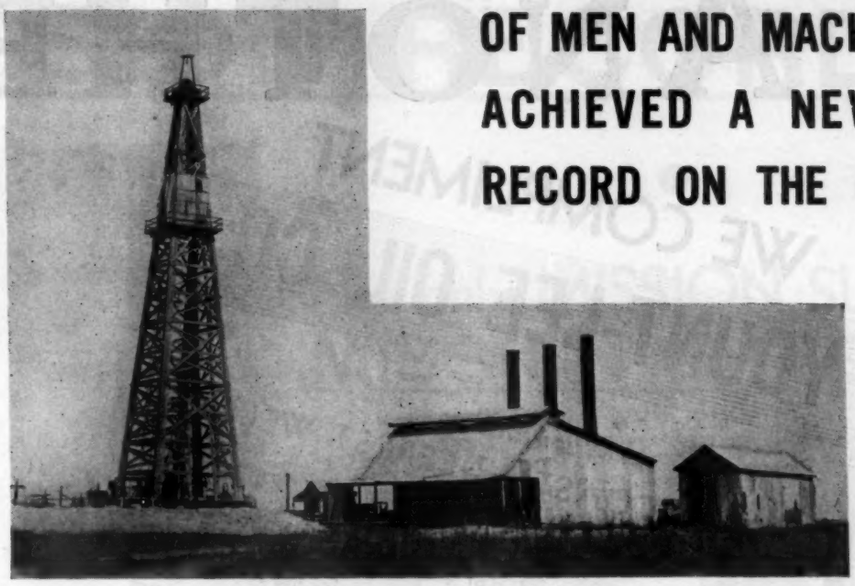
Power for the operations is generated by three 70-horsepower Oilwell boilers delivering steam to two Gardner 12x6¾x14 slush pumps and to an Oilwell 11x11 engine, which drives a No. 8 4-post drawworks with a 6-inch line shaft and a 6-inch water cooled drum, equipped with Gatke brake lining. The drawworks is a type designed and used exclusively by Yount Lee Oil Co. and manufactured by Beanmont Iron Works. The two slush

One of four crews on Gulf Coast's deepest test. Left to right: J. C. Chance (foreman in charge of operations); W. A. Carlton (driller); V. S. Airendell, T. H. Theriot, A. "Fat" Wiser and Fred Pierce

Rear view of four-post drawworks and engines used on Yount Lee Oil Co.'s No. 1 Boyt, Gulf Coast's deepest test

OUTSTANDING PERFORMANCE

OF MEN AND MACHINERY HAVE ACHIEVED A NEW DRILLING RECORD ON THE GULF COAST.



YOUNT-LEE OIL COMPANY'S NO. 1 BOYT

The deepest well ever drilled in the Gulf Coast fields.

The engine shown above is the "OILWELL" 11" x 11" Open Type Twin-Cylinder Steam Engine which was used by the Yount-Lee Oil Company in drilling No. 1 Plummer and No. 1 Boyt to two successive Gulf Coast depth records. This engine has been in almost continuous service since 1927. Although it is a light engine, intended for drilling wells not exceeding 5,000 feet in depth, it did not require a single shut-down in drilling these two record-breaking wells.

A great deal of credit is due the crews and the management of the Yount-Lee Oil Company for drilling No. 1 Boyt to a new Gulf Coast depth record. This well is now more than 9,500 feet deep. In making this new record, the Yount-Lee Oil Company broke the previous depth record, 9,344 feet, which was held by its own well, No. 1 Plummer.

Much credit is also due the "OILWELL" BOILERS, ENGINE and ROTARY used on both these record-breaking wells. This equipment is not of the heaviest or latest type built by the OIL WELL SUPPLY COMPANY but was designed and constructed several years ago for drilling to much shallower depths.

This outstanding demonstration of "OILWELL" STRENGTH and ENDURANCE under such severe overloads is just one more evidence of the excellent quality of materials, workmanship and design that is built into all "OILWELL" OIL FIELD EQUIPMENT.

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on drilling
GULF COAST'S DEEPEST WELL

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. . . and feel proud of our part in this achievement. MISSION SLIPS were used in setting this the longest string of casing in the world ever set through a rotary bowl . . . not only the longest string of casing, but the heaviest string of casing. This casing was run through a 26" Oil Well rotary with 7⅝" O. D. MISSION SLIPS, both being standard equipment.

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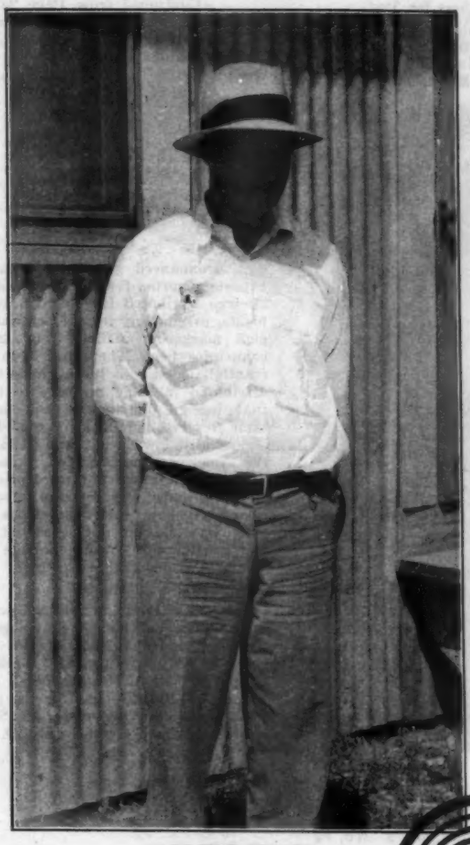

GILBERT PRINCE
Drilling Superintendent, Yount-Lee Oil Company

Not only MISSION SLIPS but MISSION VALVES were used in drilling this record well.

ONE OF THE DRILLING CREWS ON RECORD WELL
Left to right: J. C. Chance, foreman; W. A. Carlton, driller; V. S. Airendell; T. H. Theriot; A. Wiser, and Fred Pierce

Another Mission Product
MISSION PISTONS
were also used on this job.

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CONGRATULATIONS
to
YOUNT-LEE OIL CO.
on drilling
Gulf Coast's Deepest Well

BAROID
AND
AQUAGEL

for this record well came from our Beaumont warehouse *used under the supervision of* W. G. Prince, Drilling Supt.; Mike Halbouty, Engineering Dept., and J. C. Chance, Driller in charge.

AQUAGEL - treated native mud started the hole.

WORLD'S RECORD
BAROID and AQUAGEL combined kept the hole open for running casing 7,795 feet.
Conquered 1,700 feet of heaving shale.

CEMENT for the job was also furnished by us.

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For example, we furnished one major oil company approximately 300 tons out of local stocks on an emergency field order . . . . Another 200 tons . . . . numerous other examples.

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at least 100 tons of BAROID from any of the following convenient locations. (Reserve stocks at principal warehouses.)

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pumps are equipped with Mission Manufacturing Co. valves and pistons. The hole has been drilled with a 17-inch Oilwell Junior Rotary and the casing was set with an Oilwell 26-inch table. There is a Lucey 4-inch square kelly with Yount Lee Oil Co. special kelly bushings. A Wilson 6¼-inch Ideal elevator and hooks and Wilson tongs also were in the equipment.

Baldwin heavy duty chain has played an important part in the drilling of these two deep tests. For drilling, No. 1,240 rotary chain has been used for setting the long string of pipe. The same chain has drilled both tests and in the more than 18,850 feet of hole made there has not been a break. One Gray 6-inch swivel, ordinarily intended only for the drilling of a maximum of from 6,000 to 7,000 feet, has been in continuous service except for two repair jobs, not only on the present deep test now down below 9,500 feet but also on the first test which went to 9,344 feet.

Good Drilling Time

Exceptionally good drilling time has been made on the second test. From the grass roots to a total depth of 9,200 feet where drilling was stopped to run the long string of casing, only 61 days were required. This includes time required for setting and cementing of surface pipe, which was a string of 10¾-inch O.D. Jones & Laughlin casing seated at 1,400 feet. From 1,400 feet on down to 9,200 feet the hole was drilled without additional casing. This totaled 7,800 feet of open hole, which is no small accomplishment in itself. Drilling of this amount of open hole was facilitated by the use of Baroid, Aquajel and Opalite in building up the walls of the hole. Throughout the greater part of the drilling the fluid was maintained at a weight of between 14 and 15 pounds. Particular care was taken to insure a mud free of all shale, sand or other undesirable substances. All mud which went into the hole was screened with a Link-Belt mud screen. The use of these mud admixtures also enabled the Yount Lee Oil Co. to negotiate successfully a section of heaving shale, a formation which has meant the end of the majority of wells drilled in the past.

By the time a depth of 9,200 feet had been reached, a little difficulty had begun to be experienced with the hole so the company ran in the string of 7⅝-inch for protection before attempting to go deeper. Due to the small hole and the packing of the shale at the bottom around the pipe, operators were unable to get circulation so the casing was left uncemented, leaving only a back pressure valve to be drilled out before going deeper. Down to that point Jones & Laughlin 13.75-pound, 4-inch drill pipe was used. Since then a 6¾-inch hole has been drilled with 13.30-pound 3-inch drill pipe of the same make. All the drill pipe has been equipped with Hughes Streamline tool joints and Bettis protectors. Ever since the setting of the surface pipe, the hole has been drilled through a blowout preventer, a 10-inch Cameron preventer having been on that string, while now a 7-inch preventer of the same type is in use.

Of particular mention in connection with the speed and efficiency of the operators is the fact that at the present depth of the hole below 9,500 feet only approximately seven hours have been required for a round trip in coming out of the hole. All hole has been made with fish tail bits manufactured by Beaumont Well Works while core barrels have been furnished by the Reed Roller Bit Co. of Houston.

An American Iron Machinery Co. overshot fishing tool was at the well but was not used as there were no fishing jobs.

Preparations for Test

Preparations which Yount Lee Oil Co. made for the drilling of this deep test included the provision for protection of the boilers and various other pieces of

Gilbert Prince, drilling superintendent of Yount Lee Oil Co., who has supervision over drilling of that company's No. 1 Boyt, Gulf Coast's deepest test.

equipment and machinery from the elements. The boilers, which have been thoroughly insulated to conserve heat, are completely enclosed in a substantial building constructed of corrugated iron, and a small warehouse and other buildings have been put up. A shallow well, with a feed direct to the derrick floor, furnishes water requirements. Fuel oil is used for fuel, this being hauled by truck to a storage tank located about a mile from the well, from where the oil is pumped to storage on the location. The well is located out in the middle of a large, swampy cattle range and inaccessible in wet weather. An adequate camp has been provided at the well for caring for the men, consisting of four crews, working in three tours on a schedule of nine days on duty and three days off.

Drilling of this test is directly in charge of Gilbert Prince, drilling superintendent of the company at Beaumont, with J. C. Chance, as foreman, having immediate supervision of the operatons.

T. H. Theriot and V. S. Airendell, two of crew of Yount Lee Oil Co.'s No. 1 Boyt, showing Mission slips preparatory to pulling of drill stem.

Exports and Imports of Refined Oil Products

(Continued from Page 28)

ported from the Port of New York during the three weeks ended July 29 (all figures in gallons unless otherwise noted):

	Week ended		
	July 29	July 22	July 15
Gasoline	480,000	4,000	12,000
Naphtha		10,000	
Kerosene	215,000		3,000
Fuel and gas oil		190,000	
Lubricating oil	6,813,000	2,031,000	825,000
Petroleum, ref'd.	910,000	178,000	25,000
	Pounds		
Petrolatum	13,000	10,000	
Paraffin wax	1,345,000	1,170,000	1,270,000
Refined	80,000		277,000
Scale	105,000	137,000	90,000
Lub. grease	620,000	655,000	670,000

A pronounced gain in lubricating oil exports reported for the week ended July 29 was attributed largely to heavy shipments, presumably for the account of foreign marketing affiliates, by large oil companies here. There has been a substantial increase in lub oil exports lately attributed in some measure to the fact that foreign distributors had permitted their reserve holdings to run down to abnormally low levels, and flocked into the American markets for replacements when the recent sharp upward price movement got under way. Foreign buyers have been increasing their operations in the local wax market during recent weeks, and considerable export tonnage is now awaiting shipment.

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended July 29 totaled 834,000 bbls., a daily average of 119,143 bbls., compared with 1,168,000 bbls., a daily average of 166,857 bbls. for the previous week and a daily average of 152,893 bbls. for the four weeks ended July 29. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast Ports—	
New York	522,000
Philadelphia	248,000
Total	770,000
Daily average	110,000
At Gulf Coast Ports—	
New Orleans	64,000
Total	64,000
Daily average	9,143
At all United States Ports—	
Total	834,000
Daily average	119,143
Daily average four weeks	152,893

Distribution of total imports was as follows:

Crude oil	641,000
Fuel oil	193,000

California Oil Receipts

Receipts of California refined oil at Atlantic Coast ports during the week ended July 29 (there were no arrivals at Gulf Coast ports during the period) totaled 626,000 bbls., a daily average of 89,429 bbls., as compared with 242,000 bbls., a daily average of 34,571 bbls., for the previous week and a daily average of 64,214 bbls. for the four weeks ended July 29. The week's arrivals were all at New York and Philadelphia, 391,000 bbls. coming in at the former port and 235,000 bbls. at the latter. The receipts were made up of 618,000 bbls. of gasoline and 8,000 bbls. of lubricating oil, the latter being landed at New York.

At the close of the week one cargo of California refined oil was reported afloat for Tiverton, R.I., this consisting of 73,000 bbls. of gasoline on the Union Oil Co. of California tanker Utacarbon.

Easters independent marketers were reported inquiring for several cargoes of California furnace oil for nearby shipment last week. Buyers' ideas were around $1 per barrel, f.o.b. California loading terminals, with sellers on the Coast holding at from $1.05 to $1.15 per barrel.

AQUAGEL

Trouble-Proof Colloidal Drilling Mud

A specially prepared clay with a high concentration of gel type colloids. Prevents loss of circulation, caving, stuck drill pipe and casing. Reduces abrasion and seals off fissures and caves.

BAROID

Extra-Heavy Colloidal Drilling Mud

A specially processed pulverized Barytes with a specific gravity almost twice that of ordinary clay. Controls oil, gas and water pressures; will not settle from the mud; prevents loss of fluid from the hole.

STABILITE

Chemical Viscosity Reducer For Drilling Mud

A liquid chemical compound for reducing the viscosity of drilling mud without destroying their wall-building properties. Frees gas from gas-cut muds. Quickly and easily added to the mud. Very economical.

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Vibrating Rotary Mud Screen

Eliminates sand and cuttings from drilling mud. Motor or turbine driven. Pays for itself many times over by economies effected. When weight material is being used in the mud, shows even greater economy by prolonging mud efficiency.

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Thermodynamics and Heat Flow in Modern Operation

(Continued from Page 14)

With this the calculations are completed, as far as needed to design the heat flow diagrams. A few remarks should be added.

1. Fuel consumption is by all processes of utmost importance and an indicator of its economic and practical value; hence the introduction of thermodynamics. Whether waste fuels are used does not enter into the question. In the case of the two-stage distilling plant, about 2.25 per cent (by weight) of the charging stock is consumed as fuel and in the case of the cracking still about 5.5 per cent. Both are within 0.5 per cent of actual operating figures.

2. Excessive fuel consumption will be accompanied by excessive use of cooling water, oversize facilities for supplying cooling water and unnecessarily large cooling apparatus.

3. The heat flow diagram is instructive as to where heat is wasted and where probable heat may be returned to the process by means of heat exchangers.

4. In case of the cracking still, the diagram shows better than any discussion could prove, that large quantities of heat are involved, compared with the small quantity that finally goes into actual distillate vapors, due to the large quantity of circulating stock. The distillate carries off ca. 5,000,000 B.t.u., while the furnace supplies 25,000,000 and the circulating stock contains ca. 42,000,000 B.t.u.

5. It also suggests that probably a larger amount is dissipated by radiation, due to high temperatures and large quantities of heat stored in circulating stock, than is usually suspected.

6. Hot tar carries off most of the supplied heat and it seems desirable to apply far-reaching heat-exchange at this point.

7. The diagrams show the progressive influence of the practical application of thermodynamics and open up a new field of development, in as much as proper and safe heat exchangers for higher temperatures should be produced within the near future.

Interesting Papers Before London World Congress

(Continued from Page 16)

The Drilling and Control of High Pressure Wells

By M. C. SEAMARK
Drilling engineer, fields branch, Anglo-Persian Oil Co., Persia.

The paper makes no attempt to deal with the normal nonpressure method of drilling but is confined entirely to the control of wells after pressure has been encountered.

A short description of pressures likely to be met with and their relation to the depth at which they are encountered. Mention is made of the assistance to be obtained by the effect of a static column of mud fluid and of the necessity of augmenting this effect by pressure applied at the well head. Brings out the possibility of fractured formations rendering the use of mud fluid difficult or impossible.

Describes the mechanical means of closing the annular space between the casing and the drilling tools in order to enable drilling to be carried out with pressure on the well.

A description of their use and the advantages resulting from the control of wells drilled by the cable tool method.

Gives particulars of the cellar layout and various reasons for the installations as regards fire, blowout and case of operating the equipment. Deals with mud-handling pits and circulation.

Brings out the necessity of having ample supplies of mud always at hand and describes a method of preparing mud while drilling in nonmud-forming formations. Mentions the advantages of having powdered clay ready for emergencies.

A description of the various types of blowout preventers and the advantages of any particular type over another. Deals with snubbing gears and their application, also Kelly cocks and back-pressure valves. Describes how by the use of a special blowout preventer to fit core barrel or drill collar depths of cellar may be reduced.

Shows the well-head fittings necessary and their arrangements on the well head.

Describes methods of controlling the pressure at the well head by means of beans and by a pressure settling battery.

Gives examples where it is of special importance as regards the elimination of blowout and advantages to be gained by the use of light muds instead of heavy muds. Mentions the ability to so arrange the effect of column of fluid that no great differential pressure is exerted at any point in a well. Describes methods of completing a well even if it is under pressure.

Explains the technique of using the return flush method and its applications where conditions are suitable. Also describes a method of tubing wells for production under pressure and the operations and their scope for carrying out production tests and the obtaining of well-pressure data.

A general description of fishing methods and the arrangement of the well-head fittings to cope with them.

Describes the various points which require special consideration from a safety standpoint, and outlines the position of plant, electrical equipment, gas masks and safety escape gear.

Reservoir Conditions of Gas Saturated Crude Oil

By CAPTAIN D. COMINS
(Petroleum engineer, physical research), Anglo-Persian Oil Co., London.

This contribution deals with general principles and their application to oil field operating problems.

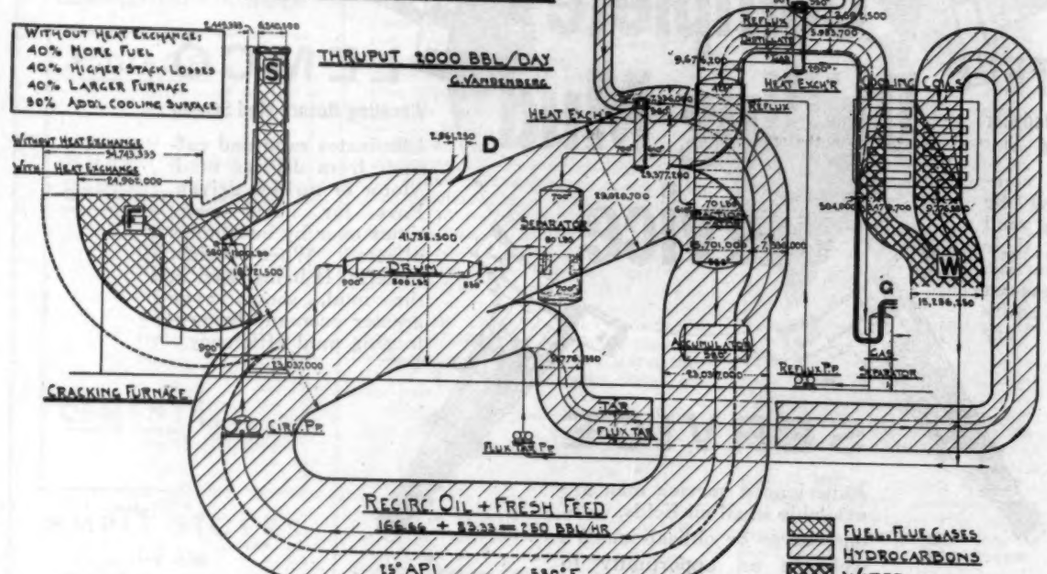
The observations were made on limestone fields in which reservoir productivity varies locally within wide limits. Data from sand fields and other limestone fields would be especially welcomed.

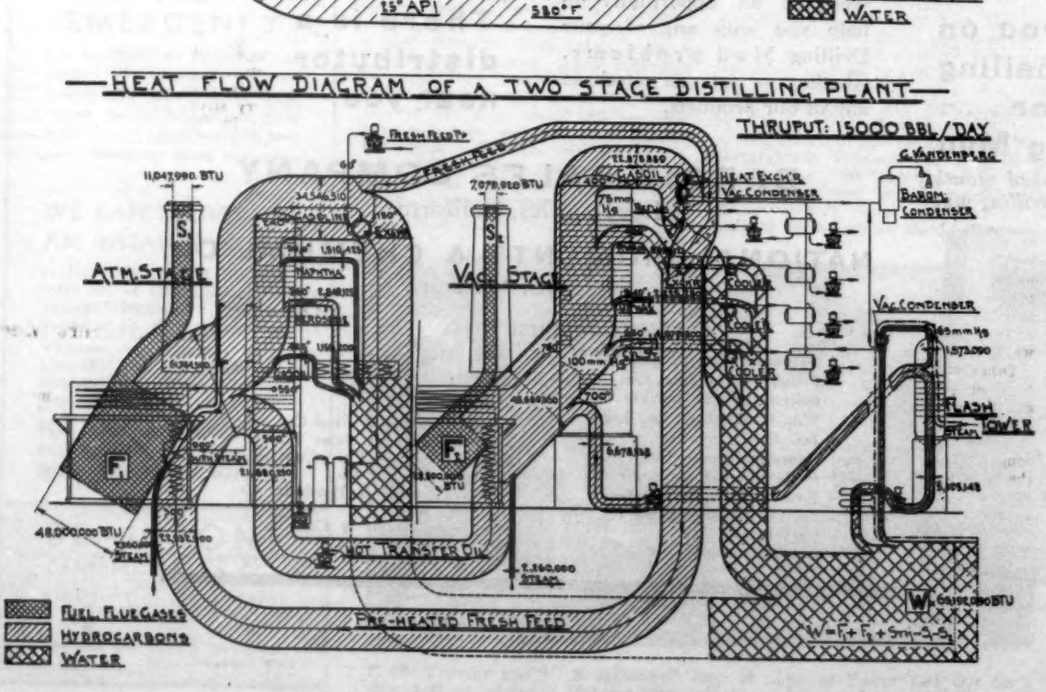
The main feature of this paper is that it deals with the conditions of gas solution equilibrium in oil reservoirs, and emphasizes the necessity of determining these conditions on individual fields by examination of crude samples collected from the reservoir under pressure.

Other published papers have reported results of quantitative investigations into the dissolved gas content of crude at varying pressures and temperatures and the resultant changes in the physical properties of the crude. Nothing, however, as far as the author is aware, has been published on actual conditions in oil reservoirs as determined by bottom hole samples.

It is generally assumed in oil field literature that crude at any point in a reservoir is saturated with gas to its actual reservoir pressure at that point. Theoretically this should not be so. For true solution equilibrium the saturation pressure of all crude in a reservoir at any time should be the gas pressure at gas oil level.

A survey of "saturation pressures" in Persia has proved that this is only the case in highly productive zones where fracturing and fissuring are favorable to convection. In other areas the crude was supersaturated, showing that diffusion





alone is a negligible factor, in human time, in the maintenance of solution equilibrium. Saturation pressures in most old producing fields should, therefore, vary substantially. Wide variations may also be expected in some virgin fields where processes of convection and diffusion have not re-established solution equilibrium disturbed by seepages.

Other points are the unreliability of dissolved gas content/pressure curves based upon regassing dead crude and, to a lesser extent, of curves based upon samples collected under pressures at well heads.

The chief application of these conclusions is in proration for gas conservation. The ideal method is to restrict production of individual wells so that bottom hole pressure drop on production does not exceed a "critical" value, which is the observed difference between the resrvoir pressure and the "saturation pressure." In comparing producing with dissolved gas oil ratios allowance must be made for method and temperature of separation.

Other applications in oil field operations such as gas separations and processing, and in problems such as estimates of reserves and ultimate recovery, are also reviewed. An interesting speculative application is that, from data obtainable in the first completed oil well in a new field, it should be possible to estimate its minimum depth below gas oil level. The information would be valuable where the geological structure is obscure.

Deepening Persian Wells Through Producing Zones

By L. D. SCOTT

Field superintendent, Anglo-Persian Oil Co., Persia.

The recent deepening of several wells by rotary through the highly productive limestone in the Anglo-Persian Oil Co.'s fields has produced some interesting drilling problems in control of rock pressure and prevention of damage to production.

Theoretically the solution to these problems is "pressure drilling," but modification of pressure drilling methods frequently saves time and money and reduces risks.

Somewhat unusual conditions had to be dealt with in this case. The well, an extremely large producer, could not be controlled with water or mud, as, due to the low rock pressure and open nature of the formation, circulation was immediately lost if such a heavy column was used.

This well was drilled through about 900 feet of the producing formation, using its own flow, supplemented by degassed crude pumped down the drill pipe, to lift the cuttings from the bit to the lowest producing show.

Snubbing of the drill pipe in and out of the hole was avoided by killing the well before pulling out, and the well was brought in again by gas lift after running in about 1,000 feet of drill pipe.

Using these methods, progress became only slightly slower than would have been the case with normal rotary methods and much quicker than if the whole of the work had been carried out under pressure drilling conditions.

A most satisfactory type of internal packer was used in the flow string, when testing the production of various sections of the hole; this tool obviated the use of complicated valve mechanism in the flow tester.

It is thought that reverse circulation methods will eventually be found to be the most economical and satisfactory for drilling in operations of this nature, provided the oil produced can be handled, and experimental work in this connection is now being carried out in Persia.

In a well where the limestone was struck at 2,733 feet and contained a rock pressure of 1,550 pounds per square inch a mud column was used which exerted only a small differential pressure over the rock pressure. It was hoped thus to avoid mudding off of production.

The simplest type of specific gravity and viscosity testing instruments was used and proved adequate.

Trouble from swabbing when pulling out was eventually overcome by the use of low viscosity barytes shale mud.

It was found in this case that mudding off was taking place and wall scraping and underreaming failed to recover the lost production. Normal water washing was also ineffective, but washing with water and "rocking" the well on and off production eventually recovered it.

Methods of Treating Crude Oil Emulsions

By DR. J. L. VAN DER MINNE

Laboratory De Bataafsche Petroleum Maatschappij, Amsterdam.

In regard to the origin of crude oil emulsions, it is held nowadays that they are not formed until they are mined. Factors which may give rise to their formation are: The concurrent pumping of the oil and the water; the passage of the two liquids through pipes; then the development of gas or the movement of gas. Almost invariably emulsions are thus formed in which the water is distributed in the oil; only sporadically are emulsions of oil in water formed.

Many of the emulsions contain the water in a coarsely divided state, and if allowed to stand, cede it readily, though sometimes to do this the emulsion has to be slightly heated. Others, on the other hand, require special treatment necessitated by the presence of substances which have the property of preventing the drops of water from coalescing; these substances are called "emulsifiers." These emulsifiers are present in the crude oil, while clay may also act as an emulsifier. The action of these substances has to be eliminated. For the better comprehension of various processes, a few of the properties of emulsions and emulsifiers are passed under review.

The emulsifiers in water-in-oil emulsions are mostly soluble or dispersible in the oil, whereas in the other type they are, on the other hand, water-soluble substances or are readily dispersed in the water. The most divergent kinds of matter may prove to be emulsifiers; there are molecularly soluble substances (colloids) and also more coarsely divided substances (suspensions). They must, however, have the property of preferably accumulating in the interface between the oil and the water; in other words, they must be capillarily active and, by the properties which they develop in the interface, prevent the particles from coalescing. Usually the emulsifier impresses its mark upon the properties of the emulsion; in nearly every case it determines whether the water-in-oil or an oil-in-water emulsion shall continue to exist as such.

The chemical separation of emulsions is based in many instances on the fact that emulsifiers of contrary types counteract each other. Thus, by adding an emulsifier of the contrary type one can destroy or diminish the protective action of the emulsifier in the interface, by means of which the emulsion can be made to coagulate. Sometimes, however, the separation of crude oil emulsions is effected by emulsifiers which in themselves may often stabilize emulsions, which, from the point of view of the knowledge of emulsions of water in oil, must on the whole be regarded as remarkable.

Other substances may also sometimes be used as emulsion coagulators. Little can be predicted about these, and although, so far as the agents required for separation are concerned, the oils may be roughly classified, it has been found that the large number of emulsions that occur in practice demand the use of a large number of different substances. Asphaltic oils may generally be regarded as the most difficult to separate.

With the help of van Smoluchowski's formula for coagulation, it is then shown why the temperature and the viscosity of the oil are such important factors. Thus, in the chemical separation of emulsions, one only eliminates those factors which obstruct coagulation, and a high viscosity and a fine dispersion may then make it necessary to allow a very long period for demulsification. Sometimes coagulation can then be accelerated by stirring, but the possibilities are limited, because such stirring may have the contrary effect upon emulsions of great viscosity, notably finer emulsification of the water in the oil.

When this is the case, the emulsion is often separated electrically; separation is effected by conducting currents of high voltage and low amperage through the emulsion. Coagulation is obtained in this way by more active means as compared with the chemical process, in which obstacles are merely removed. On the other hand a far more expensive equipment is necessary for electrical demulsification.

The chemicals used for chemical demulsification are added at various places; sometimes at the head of the well and sometimes at more distant places where the output of several wells can be treated at the same time. Next the emulsion is heated, if necessary, and conducted to settling tanks, where the water can settle. Occasionally the demulsifier is added to the well itself.

The stirring required in some cases is effected during the passage of the emulsion through the pipes.

In electrical demulsification it is electrostatic effects which play a part, and not caraphoresis. Under the influence of the high potentials, the drops of water link up into a chain, through which the current forges its way, thereby destroying the film. Ultimately a coarse emulsion is retained, which, as in the chemical methods, has to separate.

Brief reference is made to filtration methods. In the short space allotted to him, the author cannot fully survey all the methods, nor can he consider all the physico-chemical problems which are of importance. In the main, he has selected those methods which are applied in practice, and has touched upon what he regards as the most important points of the theoretical side of the question.

Developments in Gas Lift and Pumping Equipment

By HALLAN N. MARSH

Petroleum engineer, General Petroleum Corp., Los Angeles, Calif.

Recent developments in gas lift and pumping practice have been characterized by research and engineering rather than precedent and invention. The fundamental purposes of production engineering are maximum ultimate recovery and minimum total unit cost of production. Progress is being made towards both of these objectives.

The subsurface pressure gauges recently developed are proving a valuable tool in providing definite information upon points previously the subject of conjecture. They permit of determining the effectiveness of any producing method, the productivity factor of any well, and an estimate of the potential production of the well without an open flow test. Application of subsurface pressure data is not complicated where producing zones are thin, and formulas for taking into consideration the thickness of zones are presented.

Gas lift efficiency is dependent upon utilising the correct flow string, the minimum back pressure, and correct amount of circulated gas. Methods of determining the efficiency of the flow string and the correct amount of circulated gas are illustrated. The advantages of tapered tubing are questioned.

Requirements for securing maximum rate of production from pumping wells are stated and discussed, together with technique of measuring effectiveness of pumping installations. Study of columetric efficiency continues to be the most profitable point of attack upon pumping problems and some new formulas, tables and methods are presented. Power efficiency is improved by increasing volumetric efficiency, and is also dependent upon the type and size of pumping machinery and the counterbalance used. Counterbalancing is discussed and a table given. The first cost of pumping equipment is being greatly reduced at the same time that convenience and efficiency are being increased. Costs are quoted. The two most common types of A. P. I. standard pumps are still generally used, but one new type is proving advantageous for some conditions.

Relative operating costs of motors, gas engines, and steam engines are discussed briefly and limited data given.

Modern Developments in the Raising of Oil

By S. F. SHAW

Consulting engineer, San Antonio, Tex.

Modern developments in raising oil during the past two or three years have been in the direction of handling small production to best advantage, owing to the severe curtailment program in nearly all of the world's producing oil fields.

In pumping operations the centrifugal pump has been employed to advantage at moderate depths in raising oil mixed with a large volume of water.

The hydraulic pump has provided some interesting data, but its use has not become sufficiently widespread as yet to permit definite conclusions to be drawn as to application and economy.

The duplex compressed-gas cylinder and the single compressed air cylinder have given promise of adapting themselves to pumping in an efficient and economical manner. Power plants that have been employed in direct gas lift operations can be converted directly into service for handling these compressed-gas pumping units at only a nominal expenditure for regulators.

In direct gas lift operations a better knowledge of the pipe sizes which should be employed for different conditions has been the principal development of late, and this has resulted in the use of the gas lift method over a wider range of usefulness than heretofore. The continued study of data derived from gas lift operations has shown where increased efficiency and greater economies are possible, and a suggestion is made that fundamental data on this method should be obtained in the early life of fields where it may be employed, in order to plan the operations throughout the life of the property. This planning may result in reducing capital expenditure to a marked extent.

Intermittent flowing of oil wells has indicated that there are excellent possibilities for handling small wells to advantage both for increasing production and for reducing operation costs. The chamber method of intermittent flow appears to have much to recommend it, and a wider spread knowledge of its possibilities will probably be followed by a wider application in its use.

Repressuring, or pressure maintenance, in the early stage of production, has received very strong support, and is being tried out in four or five large fields, such that the advisability of employing this method under favorable conditions is not to be questioned.

It appears to have a better chance for success in comparatively shallow fields where the original reservoir pressures were low, and where only a low percentage of recovery has hitherto been obtained.

Oil Field Equipment Manufacturers Meet

(Continued from Page 15)

The code is intended to be a basic code, and the supervisory agency will make a study of the trade practices of the industry, with the intention of submitting additions to the code, from time to time, applicable to members of same, such changes to conform to the basic code.

A meeting of the board of directors will be called as soon as legal counsel for the various companies have sufficient time to study over the code and report back their views on same. The association is anxious for the code to go into effect and all members functioning as units of the association, thereby helping to bring their own industry to fit in with President Roosevelt's ideas and the National Recovery Act.

Small Increase in Mid-Continent Refinery Operations

(Continued from Page 8)

Company and location—	Daily capacity	Aver. daily runs August	Aver. daily runs July
Wirt Franklin Petroleum Corp., Ardmore	4,000	2,000	2,500
Yale Oil Corp., Yale	2,000	350	300
York Refining Co., Oklahoma City	3,000	400	500
Total	306,400	178,300	165,350

*Shut down.

REFINERY OPERATIONS IN EAST TEXAS
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Aver. daily runs August	Aver. daily runs July
Abbey Refining Co., Gladewater	500	285	300
Alamo Refining Co., Camps Switch	2,500	(*)	2,425
Arp Refining Co., Arp	2,000	500	1,450
Arpana Refining Co., Arp	3,000	1,800	1,000
Arrow Refining & Producing Co., Overton	2,500	(*)	2,100
Beacon Oil & Refining Co., Henderson	4,500	3,000	3,350
Canyon Refining Co., Kilgore	200	125	150
Carnation Refining Corp., Gladewater	200	(*)	320
Century Refining Co., Friars Switch	2,000	(*)	(*)
Chief Refining Co., Gladewater	1,500	1,200	720
Cook (R. X.), Gladewater	200	50	100
Danciger Refineries, Inc., Longview	10,000	7,500	10,000
Dutch Rose Refining Co., Gladewater	100	100	150
East Texas Refining Co., Longview	10,000	6,000	9,000
Foshee Refining Co., Gladewater	1,000	(*)	900
Gladetex Refining Co., Gladewater	500	(*)	250
Gilliland Refining Co., Gladewater	1,500	1,200	1,500
Gilmer Refining Co., Gilmer	500	(*)	130
Henderson Refining Co., Henderson (East Texas Ref. Co.)	15,000	5,000	11,000
Hyland Refining Co., Reeds Switch	2,500	1,000	2,000
Johnsonville Refining Co., Omega	200	(*)	(*)
Keller Refining Co., Kilgore	1,000	(*)	(*)
Kilgore Refining Co., Kilgore	3,000	2,900	1,000
Lake Refining Co., Gladewater	1,000	450	650
Locke Refining Co., Gladewater	600	(*)	700
Modern Refining Corp., Gladewater	1,500	900	200
O. K. Refining Co., Kilgore	1,000	(*)	(*)
Oil Refineries, Inc., Overton	4,000	3,500	3,600
Overton Refining Co., Overton	3,500	2,800	2,500
Panama Refining Co., Kilgore	250	(*)	180
Pennant Refining Co., Kilgore	1,000	700	280
Recla Refining Co., Turnerstown	200	100	(*)
Reese Refining Co., Arp	500	(†)	(*)
Rockett Refining Co., Kilgore	200	(*)	100
Rusk County Refining Corp., Overton	1,000	700	100
Shoreline Refining Co., Kilgore	500	(*)	350
Sinclair Refining Co., Camps Switch	5,000	1,700	2,500
Solar Refining Co., Overton	3,000	(†)	(†)
Southport Refining Co., Kilgore	1,000	250	250
Supreme Refining Co., Gladewater	300	(*)	125
Taylor Refining Co., Tyler	15,000	9,000	13,000
Texas Oil Products Co., Gladewater	2,000	2,000	2,000
Texas Refining Co., Kilgore	500	450	450
Trico Refining Co., Turnerstown	200	(*)	120
Trinity Refining Co., Gladewater	1,500	1,200	1,000
Tyler Refining Co., Longview	1,000	1,350	800
Union Refining Co., Camps Switch	3,000	1,800	2,900
Unit Refining Co., Kilgore	200	(*)	50
Upshur Refining Co., Gladewater	300	320	275
Total	112,650	57,880	80,295

*Shut down. †Cracking only.

REFINERY OPERATIONS IN NORTH CENTRAL TEXAS (INCLUDING PANHANDLE)
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Aver. daily runs August	Aver. daily runs July
Archer Refining Co., Megargel	1,500	400	400
Atlantic, Pacific & Gulf Refining Co., Wichita Falls	5,000	300	(*)
Continental Oil Co., Wichita Falls	6,000	4,500	4,500
Danciger Refineries, Inc., Pampa	6,500	4,500	5,000
Empire Oil & Refining Co., Gainesville	5,000	3,400	3,400
Exchange Petroleum Corp., Albany	500	200	250
Falls Refining Co., Wichita Falls	2,000	700	425
Gratex Refining Co., Graham	500	130	140
Gulf Refining Co., Fort Worth	10,000	6,000	5,000
Haskell Oil Refining Corp., Breckenridge	200	100	200
Humble Oil & Refining Co., Chilton	4,000	(*)	(*)
Humble Oil & Refining Co., Neches	5,000	2,200	2,500
Jacksboro Refining Co., Jacksboro	400	25	100
Kent Refining Co., Minerva	2,000	250	250
Kent Refining Co., Angus	4,000	290	100
LaSalle Petroleum Co., Burkburnett	3,500	270	300
Magnolia Petroleum Co., Fort Worth, No. 1	12,000	5,500	5,000
Magnolia Petroleum Co., Fort Worth, No. 2	6,000	1,700	(*)
Magnolia Petroleum Co., Corsicana	5,000	3,200	2,200
Marathon Oil Co., Fort Worth	5,000	4,000	4,000
Master Petroleum Co., Waco	1,000	500	600
Muenster Refining Co., Muenster	300	30	30
Olney Oil & Refining Co., Olney	3,000	2,000	2,000
Oriental Oil Co., Dallas	5,000	1,200	1,500
Panhandle Refining Co., Wichita Falls	5,000	3,000	3,000
Panhandle Refining Co., Kings Mill	2,000	1,300	1,200
Paragon Refining Co., Leuders	300	200	200
Phillips Petroleum Co., Isom	30,000	20,000	20,000
Phoenix Refining Co., Inc., Dallas	3,000	500	500
Pilot Point Refining Co., Pilot Point	500	300	300
Shamrock Oil Co., Sunray	4,000	600	1,000
Sinclair Refining Co., Fort Worth	5,000	(*)	(*)
Simms Oil Co., West Dallas	4,500	(*)	(*)
Southtex Refining Co., Trent	500	200	250
Southland Refining Co., Olney	1,000	200	125
Star Refining & Producing Co., Fort Worth	1,500	600	700
Superior Refining Co., Tiffin	500	50	50
Taylor Refining Co., Taylor	6,000	800	800
Taxman Refining Co., Wichita Falls	3,000	2,400	2,500
Texas Co., Dallas	16,000	12,000	11,000
Texas Co., Amarillo	4,000	2,500	2,000
Texas Pacific Coal & Oil Co., Fort Worth	3,000	2,000	2,000
Texas Pacific Coal & Oil Co., Caddo	1,000	700	650
Tucker Refining Co., Wichita Falls	200	75	75
Waggoner Refining Co., Electra	6,000	3,000	2,400
Wichita Refining Co., Wichita Falls	150	.....	60
White Star Refining Co., Cisco	500	150	150
Total	191,000	91,950	86,855

*Shut down.

REFINERY OPERATIONS IN NORTH LOUISIANA
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Aver. daily runs August	Aver. daily runs July
Bayou State Refining Co., Hosston	750	(*)	(*)
Cedar Grove Refining Co., Shreveport	1,000	1,000	1,000
Louisiana Oil Refining Co., Shreveport, Bossier	19,000	17,000	17,350
Spartan Refining Co., Shreveport	10,000	5,500	6,000
Stanolind Oil & Gas Co., Superior	3,500	1,300	1,500
Texas Co., Shreveport	7,000	(*)	(*)
Shreveport Refining Co., Shreveport	300	(*)	200
Total	41,550	25,300	25,050

*Shut down.

REFINERY OPERATIONS IN KANSAS
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Aver. daily runs August	Aver. daily runs July
Altitude Petroleum Corp., Chanute	5,000	(†)	(†)
Altitude Petroleum Corp., Kansas City, Mo.	2,000	600	600
Barnsdall Refineries, Inc., Wichita	4,000	3,000	3,000
Derby Oil Co., Wichita	7,500	4,000	5,000
Dickey Refining Co., McPherson	5,000	1,000	1,000
Eldorado Refining Co., Eldorado	4,500	3,200	3,000
Falcon Refining Co., Inc., Great Bend	1,000	600	600
Globe Oil & Refining Co., McPherson	10,000	9,000	10,000
Golden Rule Refining Co., Wichita	1,500	900	900
Kanotex Refining Co., Arkansas City	12,000	8,200	6,600
National Refining Co., Coffeyville	4,500	5,000	5,000
Phillips Petroleum Co., Kansas City	15,000	8,000	8,000
Shell Petroleum Corp., Arkansas City	22,000	18,000	12,000
Sinclair Refining Co., Coffeyville	12,000	10,000	10,000
Sinclair Refining Co., Argentine	9,500	5,000	5,000
Skelly Oil Co., Eldorado	23,000	15,000	15,000
Standard Oil Co. of Kansas, Neodesha	20,000	5,000	3,500
Sunflower Refining Co., Hutchinson	2,000	1,500	1,750
Vickers Petroleum Co., Potwin	3,500	3,000	3,000
White Eagle Oil Corp., Augusta	16,000	13,000	13,500
Total	183,000	114,000	107,450

†Cracking only.

Applications of Selective Solvent Widen in Refinery

(Continued from Page 27)

size ranging from a capacity of 65 tons to 1,000 tons daily. The equipment employed in the exploitation of the process is perfectly constructed, and the durability of such plant is best evidenced by the fact that even today there are plants in existence, erected at the time of the introduction of the process into the industry, which are still operating, without having required through all these years but insignificant repair.

It is not my purpose in this paper to describe the details of the process and the plant used in its execution. These can be easily found in the various publications, available in literature.[2] With my present observations I intended only to make clear the fact that, if the petroleum industry has today changed over to new processes of refining, and the expression refining by means of selective solvents having become a household word today, it should not be forgotten that these processes originate from the work of Doctor Edeleanu and the Edeleanu company.

As is the case with all new inventions, different phases are also to be recognized here. The first phase consisted in the diligent quiet work in the laboratory, where the foundation for the new processes had to be created and existing difficulties had to be removed. After this work had been successfully carried through the second phase began, namely the difficulty to overcome and conquer the mistrust, extended by an industry based on empiry, towards new processes developed on a scientific fundament. At this stage when introducing fundamentally new methods the mistrust had to be removed, which even common-sense industrialists first meted out to considerable developments, since the introduction of new plant is always connected with risk, as well as sacrifice of time and money. The Edeleanu company also surmounted this phase with success. It took years, however, before it succeeded in convincing the industry of the utility and profitableness of the new process. Exhaustive and circumspect work has accomplished its end, however, care being taken from the very beginning to avoid promising the industry anything which had not been first fully worked out, and for which full guarantee could not be given. When in turn also this phase had been surmounted, and on the industry becoming convinced that the new method—that is the application of selective solvents—was practical, endeavors were instituted to further improve the process and to elaborate upon it. Work in this direction has been carried out not only by the Edeleanu company itself, but also, as is invariably customary in the industry, by imitators and other companies in the petroleum industry.

Besides the SO_2 process there is another process employed today, in which the effect of SO_2 is increased by the addition of other solvents as, for instance, benzene, chloroform and the like. This process has been thoroughly worked through by the Edeleanu company as to its industrial suitability, tested in an experimental plant and is today offered by the company under guarantees for the products attainable from its application and also relative to the cost of manufacture.

Besides the benzene—SO_2 process the application of nitrobenzene, of phenol, of dichlorethylether and of furfural, is recommended by other inventors as selective solvents. All these processes employ the fundamental invention of the Edeleanu company of applying agents, which dissolve aromatic and unsaturated hydrocarbons while leaving the unsaturated constituents undissolved. The recommendation of the new agents has, it is true, widened the scope of application of selective solvents, but has not affected the foundation of such method. It is worthy of note that the solvents phenol, nitrobenzene and dichlorethylether can only be employed in the refining of lubricating oils, because the high boiling points of these solvents precludes their application in the kerosene refinery. All these solvent agents are mostly not as stable and chemically not without reaction as SO_2. They are all considerably dearer, and their recovery is fraught with more difficulty due to their higher boiling points. It may be that for certain products the one or other solvent offers some attraction, but it must not be forgotten tha all these agents are built up from the basis of the Edeleanu invention and that this represents the turning point in the refining industry.

[2]Vide the references at end of publication by L. Edeleanu in the Jour. Inst. Petr. Techn., 1932, 18, 906-917.

REPORTS DECLARED PREMATURE

CHATHAM, Ontario, Aug. 5.—Reports recently circulated that the City Gas Co., distributing subsidiary of the Union Gas Co. in London, Ontario, was planning to distribute mixed natural and artificial gas instead of merely artificial gas are apparently premature. Though the change has been studied tentatively, it is not expected that anything will be done the present year. London has been supplied with artificial gas for many years, the City Gas Co. a few years ago having passed under the control of the Union Gas Co. The latter company handles the major portion of the natural gas business in the three counties of Essex, Kent and Lambton and also controls the United Gas & Fuel Co. which supplies coke oven gas to Hamilton. Since the change, the Hamilton company has utilized some natural gas from wells drilled in Haldimand County.

Distribution of mixed gas in London would involve the construction of at least 50 miles of 10-inch or 12-inch line to deliver the gas to the London system. The nearest producing field controlled by the Union Gas Co. is the Dawn Field in Lambton County, and, if the enterprise were undertaken, it is probable the supply would be drawn from this source.

FRANK H. GREER DEAD

Franklin H. Greer, oil royalty operator, and former newspaper editor and politician in pre-state days in Oklahoma, died in Tulsa on Monday, aged 71 years.

Geophysical Crews Are Working in West Texas; Plea for Back Allowable From Yates Field

By L. E. BREDBERG
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Aug. 7.—But little production was added to West Texas during the week. Four wells were completed with a total production of only 125 bbls. of oil and 2,500,000 feet of gas. Two of the wells were in Ward County, one in north Winkler and one in the Pecos Valley Pool, Pecos County.

Only two locations were reported for the district, one in Mitchell County, the other in north Winkler County. Other permits have been taken out to drill in various counties, but these will probably not be drilled for some time, the owners only fortifying themselves with such permits in anticipation of the Government curtailing the granting of drilling permits.

The Ordovician lime in the Big Lake Field, Reagan County, paid off again this week when the Big Lake Oil Co.'s No. 11-C University in Section 12, Block 2, came in making 660 bbls. in 22 hours, with 2,000,000 feet of gas. Total depth is 8,706 feet. This is one of the deepest producers drilled in the Ordovician lime in this field.

The Railroad Commission will hear the application of Senator Ben G. O'Neal of Wichita Falls and L. R. Sproules of Fort Worth for permit to run 2,750,000 bbls. back allowable oil in the Yates Field, Pecos County. The hearing has been set for August 14, these men acting as receivers for property patented to Fred Turner, Sr., and Fred Turner, Jr., the property consisting of 561 acres and three producing wells, having been acquired by a recent decision from the Mik-Kansas Oil & Gas Co. and others. The State has the mineral interest in the land. The receivers have filed claims for back allowable oil dating back to the initial proration of the field, drilling and development on the tract having been recessed during the long term of litigation.

Ector County

Moran Drilling Co.'s test on the R. W. Smith ranch, Section 12, Block 43, Township 1n, T.&P. Survey, is drilling at 3,930 feet with the big lime expected within the next 25 or 30 feet. This test is south of the Cowden producing wells in Ector County and will be the next test completed in this area. If it proves a producer it will extend production south toward the Addis area. Whether the two producing areas will connect cannot be told until several more tests are drilled. However, some geologists are of the opinion that production will not extend from one area to the other, but that two separate pools will be proven.

Continental Oil Co.'s No. 2-B University in Section 36, Block 9, an old Ordovician producer in the Big Lake Field, Reagan County, formerly producing from 8,740 feet, has been plugged back to 8,409 feet and treated with 1,000 gallons of acid to increase production. The acid set for 30 hours after circulating and when tested the well made 40 bbls. of oil and 20 bbls. of water. A 450-bbl. oil load was used in the acid treatment.

Concho County

Mintex Oil Co.'s No. 1 Waring, completed on April 22, 1933, for an initial production of 5 bbls. per day, was given a 20-quart shot from 2,576-83 feet. After the shot 200 feet of oil and 400 feet of water stood in the hole. This small producer is in Concho County. Another test is now drilling on the Waring estate, in the vicinity of this first test.

Companies are paying rentals and acquiring more acreage in several of the West Texas counties, principally in Crockett, Scurry, Reeves, Yoakum and Reagan Counties.

Six geophysical crews are working in different parts of the district, south out of Rankin in Upton County as far north as Lubbock. North Ector County and north Andrews County being tested.

Jones County

Condor Petroleum Co.'s No. 1 Henry Sayles, discovery well near the town of Hawley in Jones County, where one other producer has been completed, has been deepened from 1,919 feet to 1,923.5 feet and doubled its production. It was formerly making 284 bbls. per day and is now making 525 bbls. per day through 2-inch tubing.

Several wells have been deepened in the producing area of southeast Ward County and others are preparing to deepen. Deepening has increased production in a number of these wells while in others it proved unsuccessful.

Nineteen wells were treated in the Fisher and Jones County areas during the past 10 days, acid proving successful in the majority of the tests.

Reagan County Test

The test of Emch and others will be located on a block of acreage in Block 58, southeast of Stiles and 8 miles northeast of the Big Lake Field in Reagan County. The California Co., which holds a block of acreage to the north of the Emch block, has taken an interest in the latter. The test will go to the regular Big Lake pay and may later be carried to the Ordovician lime. Zoch formerly drilled a dry hole in Section 5 to 3,218 feet, Empire Gas & Fuel Co. abandoned one to the north in Section 18 at 3,030 feet and to the northwest in Section 7 one was abandoned at 3,020 feet. Hagan and Emch formerly drilled a "duster" in Section 1,217, to the west. Total depth was 3,417 feet.

WICHITA FALLS

The western Foard County discovery of Texas Co. in Section 36, Block "L," which came in last week estimated good for 750 bbls., is still shut in waiting on pipe line connection. The Texas Pipe Line Co. may lay a connecting line to its main line running south from the Panhandle through Hardeman County, the adjacent county north of Foard. The Gulf Pipe Line Co., Magnolia Pipe Line Co. and Humble Pipe Line Co. have lines running near the discovery but the Texas Co. may elect to connect to its affiliated company with about 22 miles of line instead of connecting to any of the nearby lines. Another test will be drilled in the same section, and outcome may be awaited before an outlet is laid to the discovery well.

Total depth of the discovery well is now 3,571 feet having been deepened from its first total depth of 3,566 feet. Deepening 5 feet increased the production from 581 bbls.

COMPLETIONS IN WEST TEXAS

Pecos County

McClure and others' No. 1 Pecos Valley, top pay 1,536-46 feet, initial production 35 bbls. of oil per day flowing through casing, total depth 1,640 feet.

Ward County

Atlantic Oil Producing Co.'s No. 1 Jones, top pay 2,383-2,410 feet, initial production 20 bbls. of oil and 10 bbls. of water per day flowing through tubing, total depth 2,600 feet. Bradford's No. 1 Allen, top pay 2,117-20 feet, initial production 2,500,000 feet of gas, total depth 2,215 feet.

Winkler County

Richardson and others' No. 2-A Scarborough, top pay 2,845-53 feet, increases at 2,932-39 feet and 3,002-08 feet, initial production 70 bbls. per day flowing through tubing, total depth 3,050 feet.

Wildcat Operations in West Texas

Week Ending August 7

Company, well, farm name, section and block—	Remarks:
BREWSTER COUNTY	
C. P. Link & Joiner et al's No. 1 McIntyre, 853 ft. from S and 2,390 ft. from E line of Sec. 31, W. J. Mitchell Sur.	T.D. 900 ft.
CONCHO COUNTY	
Beasley et al's No. 1 Waring Estate, 400 ft. from N and E, Sec. 161, T.&N.O. Sur.	Drlg. 2,690 ft.
CRANE COUNTY	
Loffland Bros.' No. 1 Tubbs, 1,334 ft. from N line and 1,320 ft. from W line of Sec. 9, Blk. B-27, P.S.L. Sur.	S.D. 1,530 ft.
DAWSON COUNTY	
Albaugh, Ray et al's No. 1 Robinson, 1,320 ft. from N and W lines of Sec. 46, Blk. M, E.L.R.R. Sur.	Drlg. 1,400 ft.
ECTOR COUNTY	
Broderick & Calvert et al's No. 1 E. F. Cowden, 2,240 ft. from E line, 330 ft. from S line of Sec. 25, Blk. 44, Twp. 2s, T.&P. Sur.	S.D. 140 ft.
Gilpen et al's No. 1 B. H. Blakeney, 330 ft. from S and 440 ft. from E line of Sec. 32, Blk. 43, Twp. 1n, T.&P.R.R. Sur.	Derrick.
Landreth Production Co. & Llano Oil Co.'s No. 1 O. B. Holt, 660 ft. from S and W lines of N half of Sec. 20, P.S.L. Sur.	Drlg. 490 ft.
Moran's No. 1 R. W. Smith, NW cor. of Sec. 12, Blk. 43, Twp. 1n, T.&P.R.R. Sur.	Drlg. 3,680 ft.
Stanolind Oil & Gas Co.'s No. 2 E. F. Cowden, 660 ft. from N and W lines of Sec. 26, Blk. 43, Twp. 2s, T.&P.R.R. Sur.	Drlg. 112 ft.
Thomas et al's No. 1 Edwards, 330 ft. from S, 2,310 ft. from E, Sec. 36, Blk. 43, Twp. 3s, T.&P. Sur.	Set casing at 3,327 ft.
FISHER COUNTY	
Condor Pet. Co.'s No. 1 Holley, 1,170 ft. W and 660 ft. from N lines of E half, Sec. 6, Blk. R, W. E. Richardson Sur.	Location.
Cranfill & Reynolds' No. 2 George, 330 ft. from N and W lines of NE of Sec. 200, Blk. 1, B.B.B.&C. Sur.	T.D. 3,115 ft.; top lime 3,093-3,115 ft.; treating with 1,000 gallons of acid.
Southern Oil Co.'s No. 1 Beavers, 330 ft. from W and 660 ft. from S of S half of SW Sec. 193, B.B.B.&C. Sur.	T.D. 3,103 ft.; swabbed 50 bbls. in 24 hrs.; will treat with acid.
Southern Oil Co.'s No. 1-A Pardue, 2,310 ft. from S and 990 ft. from E lines of Sec. 203, B.B.&C. Sur.	Drlg. 906 ft.
HOWARD COUNTY	
Donnelly & Norman's No. 1 Magnolia Petroleum Co. (Bell), 330 ft. from N line and 330 ft. from W line of the N half of SW of Sec. 12, T.&P.R.R. Sur., Blk. 30, Twp. 1s	Rig up.
L. C. Harrison's No. 4 L. C. Denman, 1,370 ft. from the E line and 1,325 ft. from S line of Sec. 10, T.&P.R.R. Sur., Blk. 30, Twp. 1s	Pumping from 10 to 12 hours per day; T.D. 3,008 ft.
JONES COUNTY	
Dyer's No. 1 Odom, 300 ft. from S and 170 ft. from W of N 320 acres, G. Zumwalt Sur.	T.D. 485 ft.
LOVING COUNTY	
Eppenauer Drlg. Co.'s No. 1-A Victor, 330 ft. from SW and 338 ft. from SE of NW of N half Sec. 4, Blk. 2, W.&N.W. Sur.	Rigging up standard tools.

(Continued on Page 48)

ROCKY MOUNTAIN FIELDS

Average daily production, week ending August 5:

	Bbls.
WYOMING	
Salt Creek	16,390
Big Muddy	1,730
Badger Basin	40
Byron-Garland	960
Byron-East	Shut in
Dallas Derby	530
Dutton Creek	70
Elk Basin	540
Ferris	20
Frannie	200
Grass Creek	Shut in
Greybull	0
Hamilton Dome	840
Hudson	230
LaBarge	1,250
Lance Creek	110
Lost Soldier	1,870
Mule Creek	Shut in
Midway	50
Notches	Shut in
Oregon Basin	1,980
Osage	590
Pilot Butte	30
Rex Lake	Shut in
Rock River	1,340
South Casper	990
Poison Spider	120
Teapot	20
Warm Springs	Shut in
Total	29,960
MONTANA	
Buckley-Border	330
Cat Creek	720
Cut Bank	700
Dry Creek	180
Kevin-Sunburst	3,580
Lake Basin	50
Pondera	900
Total	6,510
COLORADO	
Florence	280
Fort Collins and Wellington	570
Iles Dome	580
Moffat	470
Orchard	160
Rangely	50
Tow Creek	230
Total	2,340
NEW MEXICO	
Artesia	520
Cooper area	60
Empire area	0
Eunice area	610
Getty Pool	0
Hobbs	30,150
Hogback	210
Hospah	Shut in
Jal	1,510
Lea area	2,170
Jackson	330
Maljamar	220
Rattlesnake	600
Table Mesa	80
Total	36,960
Total all fields	75,770
Total previous week	76,360
Difference	590

East Texas New Locations Show Large Increase; Back Allowable Permitted by Federal Court

By L. E. BREDBERG

DALLAS, Tex., Aug. 7.—Field locations in East Texas jumped to a new high this week when companies and independents staked out 84. Such a number of advance locations, the majority of which will probably not be drilled for some time, were made in anticipation of Government control.

Tank car shipments from the district for the week ending August 3 were 614 bbls. per day. Production was held to around 581,700 bbls. while daily average distribution ran better than 623,100 bbls. The 41,400 bbls. per day run above reported production came from storage in the district. The last three weeks' reports, or reports made up since the Government sent investigators into the field and the President announced his order against interstate shipment of illegally produced oil, give ample proof that the order has been effective, and was necessary to stop the production of oil above the daily allowable.

The Stanolind Crude Oil Purchasing Co., which has taken over many of the connections formerly held by the Humble Oil & Refining Co. in east Texas, has taken over another 100 wells from the Magnolia Petroleum Co. due to that company having a surplus of connections. The Humble Pipe Line Co. connects to and runs the oil for the majority of the Stanolind Crude Oil Purchasing Co. wells, and will connect to those added this week.

The Stanolind Crude Oil Purchasing Co. has been purchasing more steel storage at Mexia where it already had a large tank farm. Ten 55,000-bbl. tanks were taken over from the Texas Co. in the Mexia district adding nearly 550,000 bbls. to its storage capacity in that area.

Back Allowable Permit

Although the railroad commission has set aside its previous order granting permits to produce "back allowable" until August 15, Federal Judge Randolph Bryant of Tyler has granted permission to Burnham Rusk Giles Strip, Inc., to run 20,000 bbls. of such oil to make up for excess oil produced from offset leases, held by the Ortiz Oil Co. and the East Texas Oil & Refining Co.

Under the order the company will be allowed to produce 128 bbls. for two days out of three until the 20,000 bbls. is produced. The latter two companies are prevented from producing the two days out of three, making their allowable on the third day only. A permanent injunction granted by the judge restrains the Railroad Commission from interfering with the Burnham Rusk Giles Strip, Inc.

Salt Water Disposal

Again the problem of disposing of a vast amount of salt water from the wells is brought to the attention of producers in East Texas, when and if salt water is produced in such quantities as to become a burden on the oil producers in the district. The East Texas Antipollution Association has been formed primarily to study salt water and its disposal, and appointed a committee of 12 members headed by Don R. Gladney of the Magnolia Petroleum Co., assisted by M. B. Sweeney of the Sun Oil Co.

There have been three plans proposed for the disposal of such water: (1) By gathering and storing 500,000 bbls. per day to be released into the Sabine River at flood stage. (2) Gathering and moving a like amount per day through a redwood or cast iron line to the Gulf. (3) Returning a like amount to the Woodbine sand in wells west of the field.

One large company drilled a test to the Woodbine west of the field in Smith County with intention of experimenting with pumping water back into the sand if it proved to be a dry hole. However, farmers in the vicinity objected and the plan was dropped.

The pipe line plan is an extremely expensive one and the plan of pumping the water back into old wells may not be possible because of sand conditions; therefore the running of the water during flood stage may be the only practical method. However, the State may prevent such a method of disposing of the water.

Apparently the best method of controlling the output of water is to plug back to shut off the water in the wells as it shows up. This will cut down lifting costs and will also prevent a serious situation, according to many of the geologists and engineers in the district. Companies have been plugging back many of the wells showing water in an effort to shut off such water. Careful drilling and curtailment of production has held the production of salt water to a negligible amount thus far.

Wildcatting Activity

There were two wildcat completions listed this week, the Devonian Oil & Gas Co.'s test on the J. B. Beall farm in the Isaac Connelly Survey, Freestone County, and one in Van Zandt County. The former was given up as a dry hole at 5,061 feet and the latter at 3,097 feet. The latter is on the C. W. Morris farm in the C. L. Morrison Survey.

Three locations were reported although one of them was mentioned three weeks ago. The Tide Water Oil Co. and Seaboard Oil Co. have moved in a rig on a block of approximately 25,000 acres on the Long Lake plantation in Anderson County, near the Leon-Freestone County lines, in the Simon Sanches Survey.

Location of the structure in this area and subsequent purchase by the two larger companies opened a brisk leasing and royalty play, independents and majors alike taking acreage as near the test and block as they could obtain.

Bateman Drilling Co. and others' No. 1 Carlisle, in the Mary Elam Survey, Leon County, looks discouraging while coring at 5,846 feet in sandy shale and streaks of sand. Shell Petroleum Corp. and others' No. 1 Beggs, in the John Carter Survey, same county, is drilling in shale at 5,435 feet and is expected to start coring in another 6 feet. It is said to be running around 195 feet higher than the first test drilled by the unit holders in this block. That test had good showings of oil but failed to produce. The showings were sufficiently encouraging to warrant the drilling of this second test.

Joe Marr Drilling Co.'s No. 1 Lee, in the J. H. Sparks Survey, in the gas area of southern Rusk County, set 5-¼-inch casing at 3,580 feet and cored saturated oil sand at 3,608-10 feet. The test now appears as having possibilities of making an oil well instead of a gasser as are the wells around it. If this test makes an oil well it will help to bear out the contention that a separate oil area exists on this end of the field.

W. C. McGlothlin and others' No. 1 English, in the J. Henderiquez Survey, Henderson County, topped the Austin chalk at 3,903 feet and is drilling in chalk at 3,915 feet.

Henderson Abandonment

McElreath and Suggett abandoned their second test near Murchison in Henderson County. It is on fee land in the W. P. Wyche Survey. Total depth of this second test was 4,492 feet. These two tests eliminate another possible producing structure from the East Texas picture.

Many wildcats have been drilled in East Texas since the discovery of the field, but not even a small pool has been uncovered.

A new allowable will be set for the East Texas Field during the week. This allowable will be increased to between 585,000 and 590,000 bbls. and take in the additional wells drilled since the last allowable of 573,272 bbls. was set by the commission.

A group of petroleum engineers from East Texas met at the Adolphus Hotel on August 4 to discuss plans for organizing a similar body as that functioning in the Conroe Field. Such an organization will have a petroleum engineer devote full time to the many problems confronting the companies in East Texas. He will work with other petroleum engineers and the railroad commission in gathering data for dissemination at future meetings, and the hearings of the railroad commission.

East Central Texas Wildcats

Week Ending August 7

ANDERSON COUNTY

Company, well, farm name, section and block—	Remarks:
Tide Water Oil Co. and Seaboard Oil Co.'s No. 1 Long Lake Plantation, 3,700 ft. due S of S cor. of Tom Reeves estate, 97-ac. tract, Simon Sanches Sur.	Location.

BOWIE COUNTY

R. W. Lynn and W. R. Rolfe's No. 1 Mrs. R. D. Hart, 330 ft. out of NE cor. of Hart 20-ac. tract, 1 mile E of Nash, Thomas Price Sur.	Location.
Lee Timberlake et al's No. 2 Tidwell (old well to be drilled deeper), 2,310 ft. N and 665 ft. W of SE cor. of survey, L. M. Rice Sur.	T.D. 3,010 ft.

FRANKLIN COUNTY

Van Emon et al's No. 1 O. S. Maxton, 910 varas W and 910 varas S of NE cor. of survey, John Brown Sur.	Bldg. derrick.

GREGG COUNTY

Adams and Lyles' No. 6 Howard, 900 ft. from N line and 2,340 ft. from W line of survey, M. Scott Sur.	Drlg. 1,225 ft.
Arcadia Refining Co.'s No. 1 R. M. Wood, 100 ft. W of Republic's No. 1 Wood in Blk. No. 134, H. R. Hokit Sur.	Rig up.
Atlantic Oil Producing Co.'s No. 7 W. Smith, 150 ft. from W line and midway between Nos. 1 and 6, J. S. Carrithers Sur.	Waiting on cmt. to set; T.D. 3,590 ft.
Atlantic Oil Producing Co.'s No. 20-B Burnside, 330 ft. from N line and 259¼ ft. from E line of lease and survey, F. W. Johnson Sur.	Bldg. derrick.
Atlantic Oil Producing Co.'s No. 36 Hayes, 2,320 ft. from N line and 330 ft. from W line of survey, W. C. Alvice Sur.	Location.
Atlantic Oil Producing Co.'s No. 49 Judge, 2,200 ft. from E line and 1,685 ft. S of NE cor. of lease, F. W. Johnson Sur.	Location.
Atlantic Oil Producing Co.'s No. 10 T. W. Lee, 1,500 ft. from S line and 330 ft. from W line of lease, D. Ferguson Sur.	Derrick.
Badgett et al's No. 1 A. A. King, 2,200 ft. from S line and 395 ft. from W line of survey, M. Tennyson Sur.	Drlg. 2,952 ft.
Barnsdall and Sun Oil Co.'s No. 9 Bingham, 36.2 ft. E and 102 ft. S of most southerly SW cor. of Stanolind's Persons tract, W. H. Castleberry Sur.	Location.
Bishop Oil Corp.'s No. 4 A. J. Ritchie, 190 ft. from N line and 330 ft. from W line of lease, Carl Rhodes Sur.	Location.
Bristow & Wynn's No. 6 Moore, 389 ft. from S line and 75 ft. from W line of lease, D. Moore Sur.	Waiting on cmt. to set; T.D. 3,536 ft.
Cal-Tex Oil Co.'s No. 5 L. D. Crim, center between Nos. 1, 2, 3 and 4, W. F. Chisum Sur.	Waiting on cmt. to set; T.D. 3,590 ft.
Canadian Oil Co.'s No. 3 Whittaker, 147 ft. W and 73 ft. S of original SE cor. of Shell Petroleum's Jones lease, C. Alexander Sur.	Drlg. 2,635 ft.
Continental Oil Co.'s No. 5 B. C. Todd, 841 ft. from E line and center of N and S lines of lease, W. H. Castleberry Sur.	Rig up.
Continental Oil Co.'s No. 2 A. A. King, 330 ft. from S line and center of E and W lines of lease, M. Tennyson Sur.	Rig up.
Cranfill & Reynolds' No. 3 Howard, 660 ft. S of No. 2 and center of tract, Mary Scott Sur.	Waiting on cmt. to set; T.D. 3,612 ft.
East Texas Refining Co.'s No. 5 R. R. Collins, 3,480 ft. from N line and 5,290 ft. from W line of survey, D. Sanches Sur.	Fishing; T.D. 3,686 ft.
East Texas Refining Co.'s No. 6 C. Fisher, 660 ft. NE of No. 3 and 660 ft. SE of No. 5, J. Ruddle Sur.	Waiting on cmt. to set; T.D. 3,461 ft.

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COMPLETIONS IN EAST TEXAS

North Gregg County

Almeda Oil Co.'s No. 3 R. P. Doby, top sand 3,693 feet, initial production 90 bbls. per hour through open tubing, total depth 3,733 feet. Atlantic Oil Production Co.'s No. 6 Castleberry, top sand 3,586 feet, initial production 90 bbls. per hour through open tubing, total depth 3,665 feet; No. 42 Moore, top sand 3,507 feet, initial production 90 bbls. per hour through open tubing, total depth 3,541 feet. Barnsdall Oil Co.'s No. 9 Bingham, top sand 3,629 feet, intial production 100 bbls. per hour through open tubing, total depth 3,652 feet. East Texas Refining Co.'s No. 4 T. W. Tuttle, top sand 3,534 feet, initial production 40 bbls. in one-half hour through open tub-

ing, total depth 3,575 feet; No. 8 White, top sand 3,533 feet, initial production 40 bbls. in 20 minutes through open tubing, total depth 3,596 feet. F. H. E. Oil Co.'s No. 10 D. C. Christian, top sand 3,628 feet, initial production 100 bbls. per hour through open tubing, total depth 3,655 feet. Foundation Oil Co.'s No. 3 L. Willis, top sand 3,629 feet, initial production 90 bbls. per hour through open tubing, total depth 3,640 feet.

Gulf Production Co.'s No. 37 J. C. Judge, top sand 3,499 feet, initial production 64 bbls. per hour through open tubing, total depth 3,525 feet. W. L. Pickens' (receiver) No. 2 E. Hoyt, top sand 3,540 feet, initial production 156 bbls. in one-half hour through open tubing, total depth 3,584 feet. Roeser & Pendleton's No. 5 Sheffield, top sand 3,630 feet, initial production 60 bbls. per hour through open tubing, total depth 3,646 feet. Rowan & Nichols, top sand 3,506 feet, initial production 80 bbls. in 35 minutes through open tubing, total depth 3,646 feet. Stanolind and Simms Oil companies' No. 6 Percy McGeorge, top sand 3,451 feet, initial production 56 bbls. per hour through open tubing, total depth 3,504 feet. Steen Drilling Co.'s No. 6 Lodin, top sand 3,652 feet, initial production 45 bbls. in one-quarter hour through open tubing, total depth 3,700 feet.

South Gregg County

Adams and Lyles' No. 5 L. Howard, top sand 3,634 feet, initial production 88 bbls. per hour through open tubing, total depth 3,648 feet. Bass and Dillard's No. 2-B S. Carr, top sand 3,480 feet, initial production 85 bbls. per hour through open tubing, total depth 3,503 feet. Bay Oil Co.'s No. 6 Peterson, top sand 3,574 feet, initial production 70 bbls. in one-half hour through three-quarters inch tubing choke, total depth 3,620 feet. Houston Oil Co.'s No. 7 M. B. Hughey, top sand 3,472 feet, initial production 101 bbls. per hour through open tubing, total depth 3,523 feet. Jones and O'Brien's No. 14 Hughey Ross, top sand 3,593 feet, initial production 15 bbls. in one-quarter hour through open tubing, total depth 3,540 feet. Reserve Petroleum Co.'s No. 3-A A. Godfrey, top sand 3,573 feet, initial production 150 bbls. per hour through open tubing, total depth 3,598 feet. Yeager and others' No. 2 Howard, top sand 3,554 feet, initial production 90 bbls. per hour through open tubing, total depth 3,571 feet.

North Rusk County

Barnett and others' No. 2 I.&G.N.R.R., top sand 3,610 feet, initial production 75 bbls. per hour through three-quarters inch tubing choke, total depth 3,670 feet. Devonian Oil Co. and others' No. 5 W. P. Moore, top sand 3,760 feet, initial production 8 bbls. in five minutes through open tubing, total depth 3,772 feet; No. 6 W. P. Moore, top sand 3,732 feet, initial production 10 bbls. in five minutes through open tubing, total depth 3,740 feet. Hammond Oil Co.'s No. 3 Alexander, top sand 3,676 feet, initial production 60 bbls. per hour through open tubing, total depth 3,691 feet. Sam K. Vierson's No. 2 Jernigan, top sand 3,677 feet, initial production 117 bbls. per hour through 1-inch tubing choke, total depth 3,685 feet.

South Rusk County

Blackwell Oil & Gas Co.'s No. 8 S. Stone, top sand 3,638 feet, initial production 30 bbls. in one-half hour through open tubing, total depth 3,658 feet. Bristol-Duncan-White's No. 1 Womack, top sand 3,611 feet, initial production 80 bbls. per hour through open tubing, total depth 3,622 feet. East Texas Refining Co.'s No. 2-B W. W. Holland, top sand 3,720 feet, initial production 35 bbls. in one-half hour through open tubing, total depth 3,759 feet. H. L. Hunt Production Co.'s No. 3 B. F. Maxwell, top sand 3,679 feet, initial production 27½ bbls. in one-quarter hour through open tubing, total depth 3,775 feet. Mid-Kansas Oil & Gas Co.'s No. 39 M. M. Cross, top sand 3,622 feet, initial production 102 bbls. per hour through 2-inch lead line, total depth 3,627 feet. Stanolind Oil & Gas Co.'s No. 41 W. H. Siler, top sand 3,603 feet, initial production 21 bbls. in 20 minutes through 2-inch open tubing, total depth 3,611 feet. Stroube & Stroube's No. 2 R. O. Russell, top sand 3,748 feet, initial production 50 bbls. in 50 minutes through open tubing, total depth 3,792 feet.

Smith County

H. L. Hunt Production Co.'s No. 11-A R. W. Fair, top sand 3,678 feet, initial production 68 bbls. in 45 minutes through open tubing, total depth 3,689 feet. Texas Co.'s No. 10 Blackwell, top sand 3,688 feet, initial production 60 bbls. per hour through open tubing, total depth 3,708 feet.

Upshur County

Rancho Oil Co.'s No. 5 Moyer, top sand 3,597 feet, initial production 90 bbls. per hour through open tubing, total depth 3,620 feet. Twin Oil Co.'s No. 8 Bonner, top sand 3,614 feet, initial production 57 bbls. per hour through open tubing, total depth 3,626 feet.

WILDCAT COMPLETIONS

Freestone County

Devonian Oil Co.'s No. 1 J. G. Beall, top Pecan Gap 3,197 feet, base 3,284 feet, top Austin chalk 4,198 feet, base 4,574 feet, top Woodbine sand 4,954 feet, dry and abandoned, total depth 5,061 feet, Isaac Connelly Survey.

Morris County

Dr. Beeler and others' No. 1 H. C. McCullum, location abandoned.

Van Zandt County

H. C. Teague and others' No. 1 C. W. Morris, dry and abandoned, total depth 3,097 feet, C. L. Morrison Survey.

WATFORD GAS FRANCHISE

CHATHAM, Ontario, Aug. 5.—Leo A. Wilson of Sarnia this week held a conference with the Watford, Ontario, town council with reference to a proposal to pipe natural gas from Oil Springs to Watford. Some time ago negotiations took place between the town and the Union Gas Co. of Chatham when a tentative arrangement was reached for extension of the Union transmission lines from Alvinston to Watford. No franchise was granted, however. The Wilson proposal is part of a larger project to pipe gas as far east as Kitchener, and is conditional on franchise arrangements with larger communities farther east. The Watford project would involve construction of a complete local distributing system.

Leo A. Wilson and associates have some shallow gas production in Sarnia Township, and some months ago interests associated with them completed a deep gasser in the Oil Springs Field.

PUMPER FINDS HORNED TOAD BANISHES PESTS

ELECTRA, Tex., Aug. 7.—L. N. Cruse, pumper on an oil lease near here, has discovered that horned toads are good for something besides being deposited in cornerstones or being made subjects of experiments to see how long they can go without food or water.

He is using a flock—or should one say herd or assemblage?—of these quaint little lizards to banish insects in his garden. As he goes about the lease he carries a pail or sack in which he deposits the horned toads he captures. He releases his prisoners in his garden, which has thrived as a result of the toads' penchant for potato bugs, beetles, worms and various other pests. His neighbors' gardens, not similarly patrolled, are being destroyed by enemies.

East Central Texas Wildcats

(Continued from Preceding Page)

East Texas Refining Co.'s No. 3 D. G. Sparks, 330 ft. from W line of lease and 660 ft. SE of No. 1, H. Kirk Sur. ..... Drlg. 2,259 ft.
East Texas Refining Co.'s No. 9 F. White, 330 ft. from S line of lease and 425 ft. from No. 4 in H. Edwards Sur. ..... Bldg. derrick.
Joe Edgar's No. 2 Todd-Stinchcomb, 79 ft. N along W line of Stanolind's Key tract, W. Hart Sur. ..... Location.
Foundation Oil Co.'s No. 4 L. Willis, 290 ft. from N and E lines of 13.47-ac. tract, G. W. Hooper Sur. ..... Location.
Goodwin et al's No. 3 Johnson, 300 ft. E of Katter & Mansell's No. 1 Church, M. Dillard Sur. ..... Rig up.
Gulf Production Co.'s No. 38 Judge, 670 ft. N and 140 ft. E of No. 1, F. W. Johnson Sur. ..... Drlg. 2,915 ft.
Gulf Production Co.'s No. 17 H. C. Alexander, 565 ft. W along projection of N line of lease from most northerly NW cor and 375 ft. S at right angles to projected line, Mary Van Winkle Sur. ..... Waiting on cmt. to set; T.D. 3,556 ft.
Gulf Production Co.'s No. 8 S. Davis, 330 ft. S and 106 ft. E of NW cor. of lease, W. P. Chisum Sur. ..... Drlg. 2,946 ft.
Heyser & Heard's No. 2 Hindman-Guy, 5,160 ft. from S line and 2,000 ft. from W line of survey, G. W. Hooper Sur. ..... Rig up.
Humble Oil & Refining Co.'s No. 6 W. C. Mackey, 294 ft. from E line and midway between N and S lines of 5.5-ac. lease, H. F. Rodgers Sur. ..... Rig up.
Leckner and Hubbard's No. 2 Doby, 4,400 ft. from N line and 4,320 ft. from E line of survey, W. H. Castleberry Sur. ..... Location.
Magnolia Petroleum Co.'s No. 5 Nicholson, 330 ft. from S and E lines of lease and 2,500 ft. from N line and 7,680 ft. from W line of survey, D. Sanches Sur. ..... Location.
Magnolia Petroleum Co.'s No. 11 O. F. Smith, 583 ft. E of No. 10 and 583 ft. NW of No. 2, H. Edwards Sur. ..... Derrick.
Miller and Lacy's No. 2 Nicholson, 330 ft. from N line and center of E and W lines of 20-ac. lease, M. Mann Sur. ..... Rig up.
B. F. Phillips' No. 3-B League, 330 ft. from W line of lease and 180 ft. from SW cor. of "B" lease, H. Rogers Sur. ..... Rig up.
Rabbit Creek Oil Co.'s No. 2 Elder, 330 ft. from W line and 73 ft. from S line of survey, John Wilkerson Sur. ..... Waiting on cmt. to set 3,507 ft.
Reddick & Hugus' No. 2 Smith, 150 ft. E of Smith's No. 2, William Castleberry Sur. ..... Drlg. 3,110 ft.
A. D. Robinson's No. 1 Hilburn Estate, 1,199 ft. from S line and 5,220 ft. from W line of survey, J. Wilkerson Sur. ..... Waiting on cmt. to set; T.D. 3,555 ft.
Roeser and Pendleton's No. 7-A Nicholson, 3,050 ft. from N line and 330 ft. from E line of survey, M. Mann Sur. ..... Waiting on standard rig; T.D. 3,676 ft.
Bennie Rousch's No. 1 Rodden, 1,760 ft. from N line and 1,680 ft. from E line of survey, M. Dillard Sur. ..... Drlg. 1,650 ft.
Rowan and Nichols' No. 4-A Todd, 170 ft. from W line and center of N and S lines of 25-ac. tract, W. H. Castleberry Sur. ..... Derrick.
Sabine Oil Co.'s No. 3-A Falvey, 330 ft. from N and E lines of 28.7-ac. lease, M. Mann Sur. ..... Location.
Shasta Oil Co.'s No. 3-B G. W. Richey, 150 ft. from W line and 318 ft. from S line of lease, C. Rhodes Sur. ..... Derrick.
Sinclair Prairie Oil Co.'s No. 3-B A. A. King, 850 ft. from N line and 215 ft. from W line of lease, M. McCurry Sur. ..... Spudded.
A. L. Slaughter's No. 1 R. B. White, 480 ft. from N line and 30 ft. from E line of survey, C. H. Alexandria Sur. ..... Fishing; T.D. 2,871 ft.
Stanolind Oil & Gas Co.'s No. 4 Jones, 1,068 ft. N and 378 ft. W of SE cor. of 30.58-ac. lease, G. W. Hooper Sur. ..... Testing; T.D. 3,672 ft.
Sun Oil Co.'s No. 12 J. W. Akin, 660 ft. from Nos. 5 and 6 and 330 ft. from S line of lease, William G. Painter Sur. ..... Derrick.
Sun Oil Co.'s No. 9 A. S. Morton, 330 ft. from N and W lines of lease, S. Baggett Sur. ..... Set surface csg.
Sun Oil Co.'s No. 5 J. T. Elder, 330 ft. from W line of lease and 660 ft. S of No. 4, John Wilkerson Sur. ..... Location.
Tide Water Oil Co.'s No. 20 M. B. Hughey, 170 ft. from N line and 1,525 ft. from W line of lease, J. Hilliard Sur. ..... Drlg. 1,725 ft.
Yeager et al's No. 1 Howard, 300 ft. E of No. 2 and 100 ft. from N line and 2,050 ft. from E line of survey, Mary Scott Sur. ..... Rig up.

HENDERSON COUNTY

Campbell and Champlin's No. 1 R. S. Ansley, 108 varas S and 623 varas W of NE cor. of lease, 8 miles SE of Buffalo, N. H. Thompson Sur. ..... Derrick.
McElreath and Suggett et al's No. 1 Ferguson, 330 ft. out of most southerly NW cor. of 252.8-ac. tract, William P. Wyche Sur. ..... S.D. 4,490 ft.
W. C. McGlothlin et al's No. 1 T. H. English, 330 ft. out of SE cor. of tract in Blk. No. 15, on 114-ac. tract, J. Henderques Sur. ..... Drlg. 3,360 ft.

HOPKINS COUNTY

Culberson & Lynch's No. 1 Louis Stribling, 150 ft. from NW cor. of tract and lease, Thomas Norris Sur. ..... Rig up.
Mudge Oil Co.'s No. 1 T. R. Cargill, 330 ft. out of NE cor. of 64-ac. tract, 8 miles N of Sulphur Springs, John Hastings Sur. ..... Coring 3,292 ft.

HUNT COUNTY

Solar Exploration Co.'s No. 1 Smith, 210 ft. from E line and 370 ft. from S line of lease, William Glass Sur. ..... T.D. 1,500 ft.

KAUFMAN COUNTY

J. M. Scott et al's No. 2 Pannill, 1,550 ft. from NE line and 6,000 ft. S of Texas Midland Railroad, A. Cherino Sur. ..... Drlg. 2,675 ft.

LEON COUNTY

Bateman et al's No. 1 A. C. Carlyle, 150 ft. out of NE cor. of survey, Mary Elem Sur. ..... Coring 5,846 ft.
Shell Petroleum Corp.'s No. 1 Beggs, center of 122.5-ac. tract, John Carter Sur. ..... Drlg. 5,435 ft.

LIMESTONE COUNTY

C. C. Curtis et al's No. 1 Emma Daniels, 150 ft. from W line and 150 ft. from S line of 42.6-ac. tract in Pedro Varela Sur. ..... Waiting on cmt. to set 60 ft.

RUSK COUNTY

Barnsdall Oil Co.'s No. 4 T. H. Gill, W offset to McDonald's No. 2 Brightwell, R. W. Smith Sur. ..... Drlg. 2,634 ft.
Blackwell Oil & Gas Co.'s No. 8 Stone, 330 ft. from S and W lines of 52.94-ac. tract, M. J. Pru Sur. ..... Waiting on cmt. to set; T.D. 3,638 ft.
A. P. Cary's No. 4 Ras Redwine, 330 ft. from S and W lines of lease, M. V. Pena Sur. ..... Derrick.
Cordova Union Oil Co.'s No. 1-D C. C. Christian, 1,488 ft. from N line and 1,880 ft. from W line of survey, D. Clark Sur. ..... Waiting on standard rig; T.D. 3,740 ft.

Crabtree et al's No. 6 Giles, 150 ft. from S line and 330 ft. from W line of lease, M. J. Pru Sur. ..... Drlg. 2,325 ft.
Cullen Oil Co.'s No. 1 C. P. Camp, 3,110 ft. from N line and 4,880 ft. from W line of survey, Ximenes Sur. ..... Drlg. 2,935 ft.
East Shore Oil Co.'s No. 8 Fox, 600 ft. due S of No. 1, A. Carmack Sur. ..... Drlg. 2,290 ft.
East Texas Refining Co.'s No. 3 Andy Givens, 151 ft. from S line and 152 ft. from W line of lease, R. W. Smith Sur. ..... Derrick.
Griffin & Barnes' No. 1 fee, 12 ft. from S and W lines of 3-ac. tract, J. B. De Cadena Sur. ..... Waiting on cmt. to set.
Gulf Production Co.'s No. 8 Murphy, 987 ft. from S line and 280 ft. from W line of 79.56-ac. tract, F. Cordova Sur. ..... Drlg. 3,002 ft.
Houston Oil Co.'s No. 6-B Brightwell, 150 ft. from S and W lines of 20-ac. lease, R. E. Winn Sur. ..... Spudded.
Humble Oil & Refining Co.'s No. 18 J. N. Peterson, 330 ft. from N line and 1,097 ft. from W line of 65-ac. tract and lease, I. Ruddle Sur. ..... Drlg. 1,859 ft.
H. L. Hunt's No. 5-C Joe Lee, 710 ft. from S line and 330 ft. from E line of lease and survey, J. Lindley Sur. ..... T.D. 3,745 ft.
Jordan & Ramsey's No. 1 L. W. Prior, 330 ft. from N line and 407 ft. from E line of 53-ac. lease, Walker Pettit Sur. ..... Washing to bottom; T.D. 2,841 ft.
Lion Oil & Refining Co.'s No. 11-B H. Brooks, 4,960 ft. from S line and 1,410 ft. from E line of survey, M. J. Pru Sur. ..... Sidetracking; T.D. 3,646 ft.
Magnolia Petroleum Co.'s No. 10 C. C. Still, 692 ft. E of No. 6, M. McCabe Sur. ..... Drlg. 2,995 ft.
Magnolia Petroleum Co.'s No. 11 C. C. Still, 330 ft. from N line of lease and 762 ft. E of No. 10, M. McCabe Sur. ..... Location.
McDonald Bros.' No. 3 Brock Estate, 150 ft. from S line and center of E and W lines of lease, R. W. Smith Sur. ..... Spudded.
Joe Marr Drilling Co.'s No. 1 M. Lee, 459 ft. S and 330 ft. W of SW cor. of Stanolind's 100-ac. Lacy tract, J. H. Sparks Sur. ..... Running csg.; T.D. 3,610 ft.
C. L. McMahon's No. 6 S. S. Laird, 108 ft. from N line and 162 ft. from W line of lease, R. W. Smith Sur. ..... Drlg. 2,940 ft.
Martin and Cockburn's No. 4 J. P. Cansler, 1,620 ft. from N line and 1,130 ft. from W line of survey, E. Collard Sur. ..... Waiting on cmt. to set; T.D. 3,752 ft.
Charles McDonald et al's No. 2 Brightwell, 700 ft. from N line and 2,200 ft. from E line of survey, R. W. Smith Sur. ..... T.D. 3,692 ft.; S.D.
Mid-Kansas Oil & Gas Co.'s No. 12 M. C. DeQuerin, 953 ft. from S line and 300 ft. from W line of lease, J. B. De Cadena Sur. ..... Waiting on cmt. to set; T.D. 3,640 ft.
Mid-Kansas Oil & Gas Co.'s No. 14 E. E. Moores, 140 ft. from S line and 3,260 ft. from E line of survey, M. J. Pru Sur. ..... Waiting on cmt. to set; T.D. 3,645 ft.
Mid-Kansas Oil & Gas Co.'s No. 50 M. M. Cross, 4,500 ft. from S line and 2,190 ft. from W line of survey, J. B. De Cadena Sur. ..... Derrick.
Mid-Kansas Oil & Gas Co.'s No. 45 W. T. Grissom, 1,695 ft. from S line and 669 ft. from E line of J. C. Woolan Sur, J. E. Brown Sur. ..... Derrick.
Walker Murray et al's No. 1 W. H. Arnold, 330 ft. from S and W lines of 50-ac. tract, Levi N. Sparks Sur. ..... S.D. 3,722 ft.
Patterson Drlg. Co.'s No. 3 Brock Estate, 2,320 ft. from N line and 100 ft. from E line of survey, R. W. Smith Sur. ..... Derrick.
Sun Oil Co.'s No. 11 J. R. Beall, 4,320 ft. from S line and 4,400 ft. from W line of survey, W. P. Chisum Sur. ..... Waiting on cmt. to set; T.D. 3,580 ft.
Texas Co.'s No. 10 Bank of Overton, 1,001 ft. S and 861 ft. W of NE cor. of lease and survey, John C. Smith Sur. ..... Derrick.
Texas Co.'s No. 3 Cora Hanna, 302 ft. from S line and 219 ft. from W line of lease, J. B. De Cadena Sur. ..... Location.
Texas Co.'s No. 5 J. W. Turner, 955 ft. from S line and 330 ft. from W line of lease and survey, J. M. Scott Sur. ..... Rig up.
Tide Water Oil Co.'s No. 4 Glenn Pool, 2,580 ft. from N line and 3,990 ft. from E line of survey, M. J. Pru Sur. ..... Rig up.
Tide Water Oil Co.'s No. 6 Leverett, 330 ft. from S line and 1,560 ft. from E line of lease and survey, W. W. Simms Sur. ..... Waiting on cmt. to set; T.D. 3,676 ft.
Tide Water Oil Co.'s No. 7 Leverett, 330 ft. from S line and 860 ft. from E line of lease and survey, W. W. Simms Sur. ..... Derrick.
Tex-Jersey Oil Co.'s No. 4-A W. P. Keeling, 275 ft. N and 10 ft. W of SE cor. of lease, F. Cordova Sur. ..... Drlg. 3,025 ft.
Weaver-Crim Corp.'s No. 2-B Bean, 322 ft. from S line and 1,270 ft. from W line of survey, Mary Cogswell Sur. ..... Set surface csg.

SMITH COUNTY

British-American Oil Co.'s No. 5 M. L. Thompson, 3,290 ft. from N line and 1,830 ft. from E line of survey, I. Moore Sur. ..... Drlg. 2,960 ft.
Hunt Production Co.'s No. 6-B R. W. Fair, 990 ft. from S line and 800 ft. from E line of 138-ac. tract, J. Vargas Sur. ..... Drlg. 2,695 ft.
Hunt Production Co.'s No. 7-B R. W. Fair, 630 ft. from N line and 875 ft. from W line of 138-ac. tract, J. Vargas Sur. ..... Location.
Long Drilling Co.'s No. 3 G. A. Turner, D. W. Campbell Sur. ..... Derrick.
Magnolia Petroleum Co.'s No. 9 J. R. Wright, 330 ft. from S line and 330 ft. from E line of lease, J. Vargas Sur. ..... Drlg. 1,660 ft.
Alex McCutcheon's No. 4 Stone, 990 ft. from N line and 960 ft. from W line of survey, D. Shaw Sur. ..... Derrick.
Mid-Kansas Oil & Gas Co.'s No. 20 J. H. Sharp, 1,037 ft. from S line and 990 ft. from E line of lease, M. D. L. S. Coy Sur. ..... Derrick pattern.
Mid-Kansas Oil & Gas Co.'s No. 21 J. H. Sharp, 5,500 ft. from N line and 2,310 ft. from E line of survey. ..Derrick.
Reed et al's No. 2 T. O. Wright, 150 ft. from W line and 50 ft. from N line of lease, J. Vargas Sur. ..... Running tubing; T.D. 3,690 ft.
Sinclair Prairie Oil Co.'s No. 20-A A. S. Jarvis, 1,250 ft. from S line and 3,500 ft. from E line of survey, Juan Vargas Sur. ..... Derrick.
Sinclair Prairie Oil Co.'s No. 21-A A. S. Jarvis, 1,380 ft. from S line and 3,170 ft. from E line of survey, Juan Vargas Sur. ..... Rig up.
Sinclair Prairie Oil Co.'s No. 22-A A. S. Jarvis, 330 ft. from S line and 1,420 ft. from E line of survey, Juan Vargas Sur. ..... Rig up.
Sinclair Prairie Oil Co.'s No. 18-C A. S. Jarvis, 1,600 ft. from N line and 3,150 ft. from E line of survey, M. D. L. S. Coy Sur. ..... Rig up.

UPSHUR COUNTY

Conservative Oil Co.'s No. 7 Victory, 330 ft. from E line of lease and 660 ft. N of No. 6, E. A. J. Evans Sur. ..... Drlg. 3,279 ft.
W. V. Greer's No. 1 A. B. Mackey, 2,460 ft. from N line and 4,080 ft. from E line of survey, H. Pineda Sur. ..... Drlg. 3,100 ft.
Humble Oil & Refining Co.'s No. 9 G. W. Johnson, 525 ft. from E line and 221 ft. from most northerly S line of lease, G. W. Hooper Sur. ..... Waiting on cmt. to set; T.D. 3,675 ft.
Magnolia Petroleum Co.'s No. 1 C. Brooks, 345 ft. from S line and 330 ft. from E line of 50-ac. lease, J. F. Davidson Sur. ..... Location.
Magnolia Petroleum Co.'s No. 2 C. Brooks, 330 ft. from S and W lines of 50-ac. tract, J. F. Davis Sur. ..... Location.
Mudge Oil Co.'s No. 3 Bland, 330 ft. from N and E lines of 31.6-ac. lease, G. W. Hooper Sur. ..... Spudded.
Paul Pewitt's No. 1 A. J. Sanders, 330 ft. from W line of survey and center of N and S lines of lease, T. Allen Sur. ..... Drlg. 1,820 ft.
Peckham and Meadows' No. 1 L. P. League, 1,200 ft. from N line and 330 ft. from W line of survey, H. F. Rodgers Sur. ..... Waiting on cmt. to set; T.D. 3,558 ft.
Perrin & Fell's No. 3 William Landers, 330 ft. from S line and 330 ft. from W line of 64.34-ac. tract, G. W. Hooper Sur. ..... T.D. 3,660 ft.; set csg.
Rosier and Pendleton's No. 5-A Satterwhite, 330 ft. from S line and 660 ft. E of No. 4, D. Sanchez Sur. ..T.D. 3,065 ft.
Steen Drilling Co.'s No. 7 Loden, 292 ft. from N line and 485 ft. E of No. 4, G. W. Hooper Sur. ..... Drlg. 1,925 ft.
J. O. Wood et al's No. 1 W. F. Smith, 330 ft. from N and E lines of 25-ac. lease, J. M. Pineda Sur. ..Rig up.

VAN ZANDT COUNTY

Everett Drilling Co.'s No. 1 L. Tunnell, 150 ft. out of SW cor. of 72.4-ac. tract, 4 miles SW of Van, M. Moss Sur. ..... S.D. 3,168 ft.
Peden & Olsen's No. 2 W. S. Branson, 725 ft. from N line and 150 ft. from W line of tract, M. Gross Sur. ..... S.D. 600 ft.
Pure Oil Co.'s No. 4 J. H. Leonard, 275 ft. from N and 200 ft. E of 47.5-ac. tract, M. Gross Sur. ..... Drlg. 2,250 ft.
Ray Drilling Co.'s No. 1 J. W. Mallory, 1,150 ft. from S line and 150 ft. from W line of 217-ac. tract. John Walling Sur. ..... Derrick.
Van Oil Association's No. 1 Tankersley, 200 ft. from E and 1,000 ft. from S of farm. L. Landers Sur. ..... T.D. 1,284 ft.

Wildcat Operations in West Texas

(Continued from Page 45)

MITCHELL COUNTY

Neeley-Prater's No. 1 Morrison, 330 ft. from N line and 330 ft. from E line of Sec. 34, Blk. 29, T.&P.R.R. Sur. ..... Location.

PECOS COUNTY

A. & M. Pet. Co.'s No. 1 University, 1,725 ft. from S line and 330 ft. from E line of Sec. 31, Blk. 16, University Sur. ..... Flowing by heads; T.P. 1,634-41 ft.; T.D. 1,641 ft.

REAGAN COUNTY

Big Lake Oil Co.'s No. 10-C University, 2,035 ft. from S and 375 ft. from W, Sec. 25, Blk. 9 ..... Flowed 1,330 bbls. of oil on 3rd; T.D. 8,550 ft.
Big Lake Oil Co.'s No. 11-C University, 2,300 ft. from S line and 2,140 ft. from E line, Sec. 12, Blk. 2, University Sur. ..... Drlg. 8,657 ft.
Big Lake Oil Co.'s No. 12-C University, 928 ft. from N, 740 ft. from E line of Sec. 12, Blk. 2, University land ..... Drlg. 2,897 ft.
Continental Oil Co.'s No. 8-B University, 1,300 ft. from S and 1,775 ft. from W, Sec. 36, Blk. 9 ..... Produced 800 bbls. on 18th; T.D. 8,695 ft.
Continental Oil Co.'s No. 9-B University, 1,900 ft. from S line, 1,305 ft. W of E line of Sec. 39, Blk. 9, University Land Sur. ..... Drlg. 3,432 ft.
J. P. Williams et al's No. 1 Scott, 1,650 ft. from N and 330 ft. from W, Sec. 179, Blk. 1, T.&P. Sur. ..... Drlg. 2,407 ft.

REEVES COUNTY

Freels et al's No. 1 J. B. Greeman, 330 ft. from NE and 2,310 ft. from S line of Sec. 21, Blk. 2, H.&G.N. Sur.. Running csg.; T.D. 1,106 ft.
Merry Brothers & Perrin's No. 1 H. H. Johnson, 1,015 ft. from S and W lines of Sec. 5, Blk. 4, H.&G.N. Sur.... Drlg. 4,521 ft.; small oil shows at 4,334 ft., 4,361 ft. and 4,419-45 ft.; gas pockets from 4,413-45 ft.

RUNNELS COUNTY

Mann's No. 1 T. B. Wade, 330 ft. from E line and 150 ft. from S line of 73-acre tract, Blk. 10, Norvel Travis Sur. No. 533 ..... Drlg. 2,420 ft.
Simmons et al's No. 1 H. E. Wade, 150 ft. from S and 1,650 ft. from W line, Subdv. No. 5, Norvel Travis Sur. No. 533 ..... Derrick.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, Sec. 39, Blk. M, G.H.&S.A. Sur. ..... Fishing 6,108 ft.

TAYLOR COUNTY

Crisseman et al's No. 1 City of Abilene, 1,300 ft. from N and 1,250 ft. from E lines of Sec. 66, Bal Sur. ..... Location.

UPTON COUNTY

Gulf Prod. Co.'s No. 103 McElroy, 1,980 ft. from S and 660 ft. from W, Sec. 197, Blk. F, C.C.S.D.&R.G.N.G.... Drlg. 5,594 ft.; half full of sulphur water from 5,386-5,400 ft.

WARD COUNTY

Atlantic Oil & Prod. Co.'s No. 3 W. D. Johnson, 1,650 ft. from NW line of the NE half of Sec. 9, H.&T.C. Sur., Blk. 34 ..... Location.
Atlantic Oil & Prod. Co.'s No. 4 W. D. Johnson, 330 ft. from NE line and 990 ft. from SE line of NE half of Sec. 9, H.&T.C. Sur., Blk. 34 ..... Location.
George Bantley et al's No. 1 C. Berman, 330 ft. from NE line and 2,310 ft. from NW lines of Sec. 36, Blk. 5, H.&T.C. Sur. ..... Fishing for tools; T.D. 2,647 ft.
George Bantley et al's No. 1 A. Emory, 1,320 ft. from NE line and 2,310 ft. from NW line of Sec. 36, Blk. 5, H.&T.C. Sur. ..... T.D. 2,301 ft.
Eppenauer Drlg. Co.'s No. 1 University, 330 ft. from N and 440 ft. from E of S half of Blk. 16 ..... Drlg. 1,630 ft.
Gulf Prod. Co.'s No. 30 O'Brien, 990 ft. from S line and 660 ft. from W line of Sec. 6, Blk. F, G.&M.M.B.&A. Sur. ..... T.D. 2,850 ft.; plugged back to 2,654 ft.; pumped 27 bbls. of oil first 24 hours.
S. A. Thompson et al's No. 3 W. D. Johnson, 330 ft. from NE line and 1,650 ft. from NW line of the SW half of Sec. 9, H.&T.C.R.R. Sur., Blk. 34 ..... Rig up.
S. A. Thompson et al's No. 4 W. D. Johnson, 330 ft. from NE line and 2,310 ft. from NW line of the SW half of Sec. 9, H.&T.C.R.R., Blk. 34 ..... Location.

WINKLER COUNTY

Harry Adams et al's No. 3 Scarborough, 990 ft. from N line and 990 ft. from E line of Sec. 1, Blk. 77, P.S.L. Sur. ..... Location.
Colonial Oil Co.'s No. 2 State Scarborough, 990 ft. from W and 103½ ft. N of the NE cor. of Sec. 1, School Blk. 77, located in Sec. 1, Blk. W.F. ..... Rig up.
Sid Richardson's No. 3 John Scally, 2,310 ft. from the N line and 330 ft. from the W line of Sec. 94, G.&M.M.B.&A. Sur. ..... Drlg. 2,290 ft.

Oklahoma Production Reduced to 568,455 Bbls.; Crescent May Get a 10-Acre Development

By JAMES McINTYRE

Developments in the Oklahoma oil fields were largely of a routine character in the past week. Production was reduced from 600,620 bbls. per day to 568,455 bbls. per day, Oklahoma City operators reducing their output from 245,390 bbls. to 227,810 bbls. per day.

Pipe line runs from the Oklahoma City Field in the month of July were given as 8,139,037 bbls., an all-time peak averaging 262,550 bbls. per day. The June pipe line runs averaged 234,660 bbls. per day. The July allowable was 9,219,296 bbls. indicating that the producers under ran their allowable by 1,080,359 bbls.

The Stanolind Pipe Line Co. with runs of 1,844,346 bbls. led the pipe line companies in oil runs from the Oklahoma City Field in July, with the Independent Pipe Line Co. (Phillips Petroleum Co.), second with 1,431,032 bbls. The Empire Pipe Line ran 764,666 bbls. and the Oklahoma Pipe Line Co. 694,020 bbls. Globe Oil & Refining Co. took 407,329 bbls.

Dry holes on the east side and to the southwest in the Lucien area in southwestern Noble County have directed the play northwesterly. The Champlin test in Section 21-20-2w was a failure in the Wilcox sand. It was an east side test. The Sinclair Prairie Oil Co.'s test in Section 15 found nothing but water in the deep horizon and the Shell Petroleum Corp.'s No. 1 Mary Farr in Section 19 was plugged at 5,543 feet. These tests only tell Lucien operators where the oil is not to be found. The pool is looked upon as an important area for development and with this in mind the trend of development will be northwesterly from the discovery well in Section 17.

The tentative agreement in the Crescent Pool to limit drilling wells to one well in the center of 40 acres has been broken and as a result wells in the future may be drilled one well in the center of 10 acres, and locations already announced may be changed. This discovery well, Carter Oil Co. and Gypsy Oil Co.'s No. 1 Miller-McConnell in Section 28-17-4w, Logan County, has been pinched in to make up overproduction while it was being tested.

Oklahoma Daily Production

Production for the week ending August 5 and preceding week, follows:

Pool—	Bbls. Aug. 5	Bbls. July 29
Bowlegs	12,825	12,865
Bristow	11,050	11,100
Burbank	9,900	9,900
Carr City	8,500	11,970
Earlsboro	11,250	15,290
East Earlsboro	20,250	25,390
South Earlsboro	2,105	2,640
Little River	18,270	18,815
East Little River	1,150	2,435
Oklahoma City	227,810	245,390
Seminole City	12,950	11,320
East Seminole	1,320	810
Searight	3,490	2,535
Maud	1,860	1,575
Mission	5,085	9,250
Lucien	7,415	4,725
Cushing-Shamrock	13,250	13,175
St. Louis-Pierson	25,335	23,400
Tatums-Sholem-Alechem	16,300	16,550
Other pools	158,340	161,485
Total Oklahoma	568,455	600,620

Overproduction Charges

The corporation commission had the McArthur Oil Co. before it in the past week on charges of overproducing its wells in the Oklahoma City Field. The company claimed the overproduction was prior to the passage of House Bill 481, which put teeth into the proration law, but the commission brought its action on the ground that the saving clause in the bill permits prosecution. Hall & Briscoe were named on similar charges and were heard after the conclusion of the McArthur case.

As a result of the hearings the corporation commission ordered Hall & Briscoe's No. 1 Stegall shut in to make up 40,857 bbls. overproduction, and No. 1 Mueller 4,558 bbls. overproduction. McArthur-Pruitt's No. 1 Pruitt was shut in to make up 19,615 bbls., and R. A. McArthur's No. 1 Kammerdeiner, to make up 19,276 bbls. Rio Neches Oil Co.'s No. 1 Armour must make up 19,615 bbls.

The corporation commission effective Tuesday, August 1, established a state production allowable of 601,569 bbls. per day in August and 600,869 bbls. per day in September, and has set September 29 as the day on which nominations will be received for October production. It is understood the commission will recess through most of September. Most of the commission's time has been taken up this year in cases having to do with the oil industry.

The Oklahoma City Field in the seven days ending Friday, August 4, at 7 a.m. averaged 236,000 bbls. per day, divided as follows: For the 24 hours ending at 7 a.m. on July 29, 171,000 bbls.; July 30, 222,000 bbls.; July 31, 153,000 bbls.; August 1, 208,000 bbls.; August 2, 215,000 bbls.; August 3, 371,000 bbls.; and August 4, 312,000 bbls.

Completions in Creek County

Creek County, which has been actively drilled for nearly 30 years, continues to be one of the most active counties in the State. In the past week a number of small wells and failures were finished. J. E. Abbott and others' No. 2 Allen, NW NE SW Section 12-19-9, was shot with 80 quarts in Cleveland sand at 1,220-40 feet. It is a 15-bbl. well. Johnson Oil & Refining Co.'s No. 4 Boyd, CEL NE SW Section 29-19-9, was completed in Skinner sand at 2,085-2,132 feet. It made 15 bbls. after a 200-quart shot. Same company's No. 2 Davis, C SE SE Section 19-19-10, is a Red Fork sand well, 2,123-64 feet. It made 40 bbls. initially after a 240-quart shot.

In the Olive district, J. E. Crosbie's No. 6 Escoe, NW SW SW Section 26-18-8, was dry and abandoned at 1,390 feet. Layton sand was penetrated at 1,305-25 feet. Gled Oil Co. has a 50-bbl. initial producer in No. 3 Escoe, CSL SE SE, after shooting Layton sand at 1,315-55 feet with 90 quarts of explosive. F. L. Marr's No. 2 Tiger, SE NE NE Section 34-18-8, had Layton sand at 1,266-85 feet. It started at 90 bbls. after a 90-quart shot. Galbreath & Beyers' No. 2 Harjo, NW SW SW Section 35-18-8, was good for 40 bbls. following a 90-quart shot at 1,265-75 feet.

Shamblin and others' No. 1 Kelly, SW NE NW Section 2-17-8, east of the Cushing Field, found Dutcher sand at 3,065-68 feet. The well flowed and swabbed 130 bbls. in 24 hours.

Roach & McMurtey's No. 1-A Lackey, NE SE SW NE Section 28-16-9, started at 40 bbls. initially from sand at 2,632-40 feet.

Okmulgee District

In the Okmulgee district, Mack Drilling Co.'s No. 6 Richards, C NW NW Section 34-16-15, was good for 15 bbls. initially at 1,248-90 feet. Cook and others got an 80-bbl. well after a shot in sand at 1,910-13 feet in No. 1 Dunbar, SW NW NW NW Section 31-14-13. M. & M. Oil Co.'s No. 9 Murrell, SE NE NW NE Section 23-13-11, was shot with 40 quarts at 2,410-20 feet. It is a small well. Rebold & Clark's No. 5 Roberts, NW SE NW SW Section 28-13-11, is a gas well at 2,210-20 feet. Baker and others have a 4,000,000-foot gasser from sand at 1,653-54 feet in No. 1-A Hayes, CEL SE SW Section 11-13-12.

In Muskogee County, J. S. Routt and others' No. 1 Escoe, CNL SE NE Section 17-13-17, was dry and abandoned at 2,118 feet.

Drilling Naval Reserve

The Naval Reserve area in Osage County, on which an Arbuckle lime pool was opened by the Peters Petroleum Corp. and others is being developed by operators who purchased leases at auction sales before and after the discovery of production there. The National Refining Co.'s No. 1, SW NW NW Section 12-24-7, tested only 15 bbls. initial production from Arbuckle lime at 2,890-2,920 feet. Producers & Refiners Corp. was drilling below 800 feet in No. 1, SW NW Section 15-24-7, and the Champlin Refining Co. was below 900 feet in No. 1, NE SE Section 16. The Continental Oil Co.'s No. 1, SW SW SE Section 21-24-7, got Bartlesville sand at 2,641-2,701 feet. It was shot with 80 quarts of explosive and made 154 bbls. in 24 hours. Peters Petroleum Corp. and others' No. 3, NE SW NE Section 24-24-7, was drilling below 1,000 feet. Bay Oil Co. was drilling past tools at 2,210 feet in No. 1, SE SW Section 25-24-7. It is an old well being deepened.

The Lewis Production Co.'s No. 3, NW

Wildcat Operations in Oklahoma

Northern Oklahoma

ALFALFA COUNTY

Company, farm and location— Remarks:

Acre et al's No. 1 Acre, C SW NE Sec. 14-24-11w.....O.W.D.D.; drlg. 5,660 ft.

BECKHAM COUNTY

Pattee Royalty Co.'s No. 1 Goose Tree, SW SE SW SE Sec. 32-10-23w.....S.D. 3,060 ft. for liner.

CADDO COUNTY

Denver P. & R. Co.'s No. 1 Noe, NW SW SW Sec. 34-10-10w.....S.D. 9,540 ft.

COAL COUNTY

Dodd & Burton's No. 1 Grigsby, NW SE NE Sec. 35-1-8..Drlg. 1,878 ft; 100 ft. of oil.

Funk & Russell's No. 1 Miller, SE NE Sec. 10-2-8.....Fishing 2,750 ft.

GARFIELD COUNTY

J. H. Lewis' No. 1 Clark, C NW NW Sec. 34-21-6w.....Cmtd. 15-in. 110 ft.

HUGHES COUNTY

Dixie-Lee Oil Co.'s No. 1 Taylor, C NW Sec. 27-5-10....Drlg. 350 ft.

Pioneer Pet. Co.'s No. 1 Brock, SE cor. Sec. 26-5-11 .....Spudded in and S.D.

Redwine et al's No. 1 Badger, C N half SW SW Sec. 4-5-11.....S.D. 330 ft.

Scruggs et al's No. 1 Black, NE Sec. 13-9-10.....Rig.

KAY COUNTY

Blauner et al's No. 1 Maple, NE NW SE Sec. 20-27-4....Drlg. 1,565 ft.

KIOWA COUNTY

Christian's No. 1 Jones, NE NW Sec. 5-7-18w .....S.D. 1,904 ft.

McWhirter et al's No. 1 Vanderneck, NE NW Sec. 3-7-19w (O.W.D.D.) .....S.D. 2,155 ft.

LINCOLN COUNTY

J. Garfield Bull's No. 1 Smith, NW SE Sec. 26-16-6....Rig.

Magnolia Pet. Co.'s No. 1 Wagoner, SW SE Sec. 2-14-3 ..Drlg. 4,928 ft.

LOGAN COUNTY

Gypsy Oil Co.'s No. 1 McConnell, C NE SE Sec. 28-17-4w. Wilcox 6,120-41 ft; 5,725 bbls. in 24 hrs.; shut in.

Shell Pet. Corp.'s No. 1 Faulkner, C SE NW Sec. 11-15-4w. Drlg. 6,706 ft; show wtr.

MURRAY COUNTY

A. E. Harden's No. 1 Sadler, NE Sec. 19-1-3.....Rig.

T. E. Revells et al's No. 1 Wolfe, NE cor. Sec. 15-1-2....Drlg. 400 ft.

MUSKOGEE COUNTY

J. S. Routt et al's No. 1 Escoe, CWL SE NE Sec. 17-13-17 Drlg. 905 ft.

NOBLE COUNTY

Sinclair Prairie's No. 1 Jerome, SW cor. Sec. 15-20-2w..T.D. 5,337 ft; P.B. to 4,955-70 ft. to test.

Wentz & Feagen's No. 1 Eyler, C SE SW Sec. 10-21-2...Drlg. sand 3,027 ft.

OKLAHOMA COUNTY

Mid-Continental Oil Co.'s No. 1 Edwards, C SE SE Sec. 19-11-1 .....Drlg. 2,740 ft.

H. E. Rapp's No. 1 Price, CEL NE SW Sec. 19-14-3w....Drlg. 2,490 ft.

F. Russell's No. 1 Heapley, SW NW NE Sec. 23-12-3w..Drlg. 4,525 ft.

PAYNE COUNTY

Kemp & Nunnelee's No. 1 Crane, SW SE SW Sec. 10-17-6 S.D. 1,400 ft.

O. N. Maines et al's No. 1 Scheldberg, NW SW NW Sec. 27-22-6 .....Wilcox sand 3,114-38 ft; wtr.; S.D.

PITTSBURG COUNTY

Moffett & Hall's No. 1 Jones, C NE NW Sec. 14-5-14 ..Drlg. 2,705 ft.

PONTOTOC COUNTY

Gilbert's No. 1 Starritt, NW SE Sec. 32-4-6.....Drlg. 1,313-20 ft; 5,000,000 ft. gas.

Choctaw O. & G. Co.'s No. 1 Thompson, SW NE SW Sec. 1-1-7 .....Drlg. 1,370 ft.

W. E. McGraw's No. 1 Mayhue, NE Sec. 19-2-6.....Drlg. 1,180 ft.

McGee et al's No. 1 Newborn, SW NE Sec. 31-5-4.....Rig.

Williams' No. 1 Kroth, NE SE Sec. 33-3-4.....H.F.W. 1,977 ft.

Wirrick's No. 1 Lee, SE SW Sec. 29-2-7 .....Drlg. 2,641 ft; S.O.

POTTAWATOMIE COUNTY

Payne Drlg. Co.'s No. 1 Lovelace, NW SW NW Sec. 27-6-4 W.O.C.S. 3,623 ft.

SEMINOLE COUNTY

Carter Oil Co.'s No. 1 Bay, C W½ NE NE Sec. 23-11-6..Drlg. 1,030 ft.

Sinclair Prairie's No. 1 Tierney, SE cor. Sec. 3-11-6.....Drlg. 868 ft.

Sibble & Freeman's No. 1 Gilbert, SW NW Sec. 25-8-7.... Machine

Stewart & Egan's No. 1 Sanderson, NE SW Sec. 27-6-5..Drlg. 1,800 ft.

Filmlee's No. 1 Bowlegs, SE NE SW Sec. 1-7-7 .....S.D. 2,800 ft.

Armstrong et al's No. 1 Diamond, NE SE SW Sec. 8-6-7..S.D for cag. 4,044 ft.

WASHITA COUNTY

McWhirter & Bost's No. 1 Hall, SW SE SE Sec. 23-8-19w. Drlg. 180 ft.

Southern Oklahoma

ATOKA COUNTY

Blake's No. 1 Galbreath, SW NE SE Sec. 6-1-15 .....Drlg. 248 ft.

Malernee et al's No. 1 Cole, NE NW Sec. 19-2s-14.....S.D. 235 ft.

L. E. Stewart et al's No. 1 Stewart, SE SE Sec. 2-4s-16 ..S.D. 1,950 ft.

Wacker et al's No. 1 Baskett, SW NE NW Sec. 18-1-15..Drlg. 325 ft.

JEFFERSON COUNTY

Wakefield's No. 1 Kelly, NW SE Sec. 1-5-8w..... Drlg. 550 ft.

STEPHENS COUNTY

Doyle Oil Co.'s No. 1 Cunningham, SE NE NW Sec. 4-1-6w .....Drlg. 2,500 ft.

Sledge et al's No. 1 Worley, SW SE SW Sec. 22-2-7w....Fishing 460 ft.

TILLMAN COUNTY

Emenheser et al's No. 1 Pace, C SW Sec. 3-4s-17w.....S.D. 3,280 ft.

J. H. Everett's No. 1 Crane, SW cor. Sec. 15-3s-14w.....Rig.

Gypsy Oil Co.'s No. 1 Pitcher, NW Sec. 26-4s-15w.....C.O. 1,750 ft; T.D. 2,786 ft.

NW NE Section 28-24-7, found Bartlesville sand at 2,644 feet, gas at 2,649 feet and oil at 2,676 feet, total depth 2,703 feet. The pay was shot with 120 quarts and the well made 75 bbls. of oil and 175 bbls. of water in 24 hours. Later it swabbed 50 bbls. of oil and 80 bbls. of water in 24 hours.

In the Lucien Area

Additional new work was started in the Lucien area in southwestern Noble County. Shell Petroleum Corp. and others' No. 1 Magney, C SW SW Section 17-20-2w, had started drilling. Continental Oil Co.'s No. 1 Harper, CEL NE SW Section 18-20-2w, was below 2,300 feet. Rig was up for Shell Petroleum Corp. and others' No. 1 Boley-A, C NE NE Section 18, and the same operators' No. 1 O'Hern-Miller, C SE SE Section 18, had cellar dug and material moved in. Texas Co.'s No. 1 Maxwell, CEL NE NW Section 18-20-2w, was drilling below 2,000 feet.

Shell Petroleum Corp.'s No. 1 Schoenwald, C NW NE Section 19-20-2w, was drilling at 3,707 feet. Stanolind Oil & Gas Co. and Amerada Petroleum Corp.'s No. 1 Kolb, C NW NE Section 33-20-2w, was drilling below 2,250 feet.

Texas Co. has made locations for two wells on the Snodgrass farm, in the Lucien area. No. 1 is in C SW NE Section 7-20-2w, and No. 2 in the C SE NE of the same section.

Sinclair Prairie Oil Co.'s No. 1 Jerome, C SW SW SW Section 15-20-2w, drilled into salt water at 5,235 feet.

The Shell Petroleum Corp. will abandon No. 1 M. Farr, C NE SE Section 19-20-2w, at a total depth of 5,543 feet, and in the Wilcox sand. The Champlin Refining Co.'s No. 1 Graves, SW NW NE Section 21-20-2w, was being plugged back to shoot the Peru sand at 4,590-4,620 feet. It had been drilled to the second Wilcox sand at 5,278-93 feet and got salt water.

In Greater Seminole

Amerada Petroleum Corp.'s No. 1 Terry, C NE NE SE Section 32-7-4, Pottawatomie County, found Simpson dolomite at 4,197-4,203 feet, total depth 4,208 feet. The well swabbed 165 bbls. of oil and 25 bbls. of water and was then shut down for orders. Conley Drilling Co. and others were drilling below 1,660 feet in the NE cor. Section 13-7-4. Deep Rock Oil Co.'s No. 1, C SE NE SE Section 32-7-4, tested 82 bbls. of oil and 15 bbls. of water from dolomite found at 4,171 feet, total depth 4,200 feet.

Mid-Continent Petroleum Corp.'s No. 1 Brandenberg, C SW SW NE Section 33-7-4, found dolomite pay at 4,295-97½ feet. Tubing was pulled and the well flowed 195 bbls. The crew was rerunning the tubing.

The Magnolia Petroleum Co.'s test, C SE SE NE Section 26-6-4, which found oil sand at 3,110-80 feet, pumped 107 bbls. in seven hours and 120 bbls. in eight hours. Total depth is 3,220 feet.

Gypsy Oil Co.'s No. 2 Coker, SE SW NE Section 2-8-5, Pottawatomie County, got Wilcox sand at 4,217-31 feet. It swabbed 74 bbls. A 10 and a 20-quart shot was followed by a 218-bbl. flow in 18 hours.

E. H. Moore and others are drilling a test in C SE SE SW Section 29-2-7, Pontotoc County. Caney sand from 2,705 and 2,927 feet had been drilled through but no showings had yet been found.

The Amerada Petroleum Corp. and others' No. 9, C SW SW NE Section 29-9-6, Seminole County, got Wilcox sand at 4,195 feet and was at a total depth of 4,206 feet. The crew milled up a tester and cemented 8-inch pipe at 4,173 feet.

The El-Barr Oil Co. (formerly Barrett and others) No. 1, C NE NW Section 10-7-4, Pottawatomie County, found Hunton lime at 3,680-3,947 feet. It was "dosed" with 1,000 gallons of acid and 90 bbls. of oil and when opened made 500 bbls. of oil in 24 hours.

Magnolia Petroleum Co.'s No. 1 West, SE NE Section 26-6-4, Pottawatomie County, produced 267 bbls. in 24 hours from Hunton lime topped at 3,104 feet.

W. A. Delaney's No. 1-A Busby, SW SE SE Section 20-5-8, Pontotoc County, was abandoned as dry. There was a small showing of oil at 835-50 feet.

The extension of the Tatums Pool in Carter County, opened by the Carter Oil Co. has been named the Tussy Pool, after the town of that name nearby. New work in the general area is active. The Carter Oil Co. was rigging up rotary for No. 1 Perkins, C SW NW SW Section 3-1s-3w, and Walter Neustadt was moving in material for No. 1 fee, NE SW SW Section 3. The Foster Oil Co. has made location for No. 1 Carter, C NW NW SW Section 13-1s-3w. Tatums Oil Co.'s No. 1 Lucas, C SE SE NE Section 14-1s-3w, is a rig. Samedan Oil Co. was drilling in shale at 2,250 feet in No. 1-A Curtis-Gorman.

Paul Turner and others' No. 1 Carter, C SW NW Section 13-1s-3w, made 160 bbls. in 24 hours from sand at 3,365-3,503 feet.

K. D. Oil Co.'s No. 4 Burton, SW NW Section 30-1s-2w, produced 323 bbls. the first six hours at 2,408-41 feet. It was given a dose of acid and made 181 bbls. in 24 hours. Same company's No. 5 Burton, C NW SW NW Section 30, produced 552 bbls. in 24 hours. It had sandy shale at 2,324-36 feet, limestone at 2,336-41 feet and broken shale and lime at 2,341-62 feet.

Holdenville District

Phillips Petroleum Co.'s No. 3, C SW NE NE Section 16-7-8, Hughes County, which came in some time ago producing 12,000,000 feet of gas from Booch sand at 2,867-2,934 feet, was showing a light spray of oil. Troup and others' No. 2, C NW SE SE Section 15-7-8, pumped 75 bbls. a day from sand at 1,166-1,200 feet. Same operators' No. 3, C NE SW SE Section 15, was rigging up. Manard and others' No. 3, CWL NW NE Section 22-7-8, pumped 60 bbls. per day from sand at 1,196-1,218 feet. Jackson and others have a machine in to drill No. 1, C NW NE NE Section 22-7-8. Royce and others got a 2,000,000-foot gas production at 847-55 feet and 8,000,000 feet of gas at 990-1,028 feet. The gas was killed and drilling continued.

The Shawnee Oil & Gas Co. will abandon its No. 1, C SW SW NE Section 24-7-8. A hole full of water resulted when sand at 1,127-45 feet was penetrated.

In Tulsa County, Helvie & Stout's No. 2 Derrisaw, NE NW SE Section 24-18-15, was dry and abandoned after passing through dry sand at 989-1,039 feet, and J. E. Martin's No. 2 Drew, CNL NE SE Section 26-18-15, got dry sand at 1,044-54 feet, and was abandoned.

The Magnolia Petroleum Co.'s No. 1, C SW SE SE Section 2-14-3, Lincoln County, found Viola lime at 4,897 feet. At 4,932 feet a little water was encountered.

In Cotton County, U. S. Davis and others' No. 1 Brady, SW NW Section 10-2s-11w, had reached the contract depth of 2,500 feet.

IMPORTANT BOOKS
for the Oil Man's Library

"OIL FIELDS IN THE UNITED STATES"

Dr. Walter A. Ver Wiebe, professor of geology, University of Wichita, Wichita, Kans., has written a geology of oil fields of the United States that sets before the student the geological details of every important area. There are good books in which the principles of petroleum geology are discussed and in which specific oil fields are described by way of illustration. There are books which describe the oil fields of a decade ago in a manner which takes full advantage of the information then available. Oil fields have multiplied in the last 10 years, however, and the literature has multiplied even more rapidly.

The student of today who is preparing himself for the career of petroleum geologists, therefore, finds the details which he needs for a good perspective scattered through the files of magazines and of state and Federal publications. The professional geologist who wishes to keep abreast of his subject finds himself handicapped, because the very nature of his work keeps him away from libraries where he might have access to the current literature. The executive of an oil compnay who is eager to widen his knowledge on every phase of the company's operations is unable to read all the literature because he lacks time. For all these this book has been prepared.

During the past six years Doctor Ver Wiebe has taught petroleum geology, four years at the University of Michigan and two years at the University of Wichita. In preparing his lectures for these courses he has searched the literature and brought together the instructive details of every district and every field. These details have been augmented and changed from time to time until they constitute at present all the essential facts regarding the occurrence of oil in the United States.

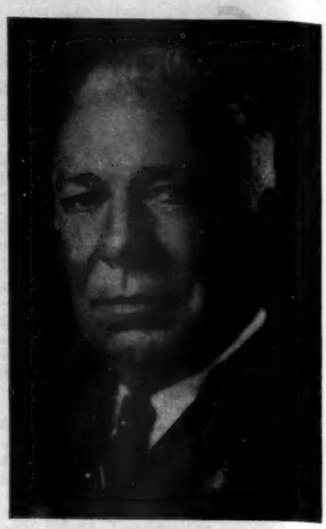
In building a framework for the numerous details brought together in this book, Doctor Ver Wiebe adopted a new basis of classification, which he has called the "Tectonic Classification." Oil fields have a relationship with each other which is controlled by the large structural features of our continental mass. These large structural features, or tectonic elements, are therefore used as a basis for the grouping of the scattered fields of the United States into petroliferous provinces. Each province forms a natural unit; but, in some cases, these units must be subdivided on the basis of structural features of subordinate rank within the province. Such subdivisions are called "districts."

With the tectonic setting as a background, the essential details of the stratigraphy in each province and in each district are treated at length. Equal emphasis is given to the peculiar structural conditions which have controlled the accumulation of oil and gas in each province and district as well as in certain typical fields and pools. The nature, thickness, and correlation of the oil horizons have been given as much space as these important topics warrant. Other less scientific details, such as the history of development, production statistics, first cause for development, and gravity of the oil produced, are all systematically taken up, in order to make the picture complete. The most helpful articles and papers that refer to the fields in each province or district are given in a selected bibliography appended to each chapter.

"Oil Fields in the United States" may be purchased through the Book Department of The Oil and Gas Journal at the regular postpaid price of $6, payable by check or money order before book is forwarded.

Robert Law Dies in Car; Late Barnsdall Chairman

NEW YORK, Aug. 7.—Robert Law, former chairman of the board of the Barnsdall Oil Corp., died Wednesday



ROBERT LAW

night in his automobile of a heart attack on the way to his home, Lawridge, Port Chester, N. Y., from the Indian Harbor Yacht Club, Greenwich, of which he was a former commodore. He was accompanied by his secretary, Newell Vaughn, who was driving the car when his employer was stricken. Mr. Vaughn sped to the Greenwich Hospital a few blocks away, but Mr. Law died before arrival. He would have been 59 years old in a week.

Chief among Mr. Law's diversified business interests was the Barnsdall corporation, with which he became affiliated 25 years ago, serving successively as president, chairman of the board of directors, and since last January as chairman of the executive committee.

He was born in North Platte, Neb., on August 17, 1874. His father, the late Robert Law, Sr., was a pioneer in the railroad development of the West as an executive of the Union Pacific. He was a graduate of the University of Chicago and entered the railroad business after leaving college. He was an executive of the Chicago, Burlington & Quincy and the Colorado Midland Railroads.

In 1906 he married Miss Frances B. Barnsdall, daughter of the late Theodore N. Barnsdall, Pittsburgh, Pa., oil man, and in 1907 he became associated with his father-in-law. He assumed control of the business at the latter's death in 1917.

He is survived by his widow; two sons, Robert and Theodore N.; two brothers, Morrell of Los Angeles, Calif., and George of Espanola, N. Mex., and a sister, Mrs. Robert Smith of Chicago.

Automatic Equipment Being Made in Tulsa

The Hanlon Waters & Co. of Tulsa has designed and is now manufacturing at Tulsa, a complete line of automatic equipment such as liquid level controls, lever valves, motor valves, reducing valves, back pressure valves, relief valves and like regulating equipment for refineries and gasoline plants.

For 10 years executives of this organization handled and were responsible for much of the development in this line of equipment as applied to the oil industry. This equipment will be sold either direct or through supply stores.

ROYALITE INCREASES CAPITAL

CHATHAM, Ontario, Aug. 5.—Royalite Oil Co., chief operating subsidiary of Imperial Oil, Ltd., in the Turner Valley Field, has secured supplementary letters patent increasing its authorized capital from 500,000 to 1,000,000 no par shares.

Kansas Production Close to Its All Time Peak; Lid Lifted in Big McPherson County Area

By JAMES McINTYRE

An increase of nearly 4,000 bbls. per day in the production of the Hollow Pool in Harvey County brought average daily production of Kansas for the week ending August 5 up to 130,145 bbls. In the 40 years of development in Kansas production of crude oil has rarely reached this height. In the middle of May, 1930, production reached 130,975 bbls. per day for a period of a week, but last week's crude oil output was many thousands of barrels in excess of the average for the past 16 years.

The Corporation Commission on August 3 made a ruling in the matter of making up accumulated shortage in prorated areas when a producing horizon is abandoned.

The commission finds "where wells in prorated areas have been given allowables, either on a percentage or per well basis, and have accumulated shortages which they are unable to make up from the producing horizon on which allowables were given, and in which said shortages were accumulated, that the abandonment of any well for any reason in any producing horizon shall be considered as abandoning all rights to produce shortages accumulated from the producing horizon abandoned.

"The commission further finds that the abandoning of any producing horizon and the deepening of any well to another producing horizon or the plugging back of any well to a higher horizon, shall, for proration purposes, be considered as a new well, and entitled to its allowable from date of completion in the same manner as any other new well would be treated in the same field.

"It is therefore ordered that all accumulated shortages are automatically canceled when the producing horizon, in which said shortages have been accumulated, is abandoned.

"It is further ordered that the abandoning of the producing horizon and the deepening of any well to another producing horizon or the plugging back of any well to a higher horizon shall be considered as a new well for proration purposes, and entitled to its allowable from date of completion from the horizon from which the operator desires to produce oil."

Kansas Daily Production

Production for the week ending August 5 and for the preceding week follows:

	Bbls.	
	Aug. 5	July 29
Hollow	14,710	10,995
Ritz-Canton	23,935	24,150
Voshell	7,250	7,170
Sedgwick County	10,575	10,165
Mabee (Nikkel)	8,770	9,305
Ellsworth County	2,523	2,507
Barton	327	273
Rice County	5,612	5,529
Reno County	2,195	2,[illegible]
Greenwood County	10,850	11.
Butler County	16,615	16,5
Other pools	26,783	25,15[illegible]
Total Kansas	130,145	125,475

Test in Finney County

The National Refining Co. is starting a wildcat test in C SE Section 2-23-29w, in Finney County, which it is expected will be drilled to 5,500 feet if necessary. It is 6 miles east of the dry hole on the Wells farm, abandoned several months ago. It will be started with rotary tools. Cable tools will be used to test formations in the deep horizons.

Slick, Pryor & Lockhart, Inc., and the Globe Refining Co. will lay a 6-inch line from the latter's refinery in McPherson to the former's line at Lyons. The Globe Refining Co. has contracted to buy 1,000 bbls. a day from the Slick, Pryor & Lockhart Co., but this will not interfere with operations of the last named company's plant at Hutchinson. It is expected the Slick, Pryor & Lockhart Co. will extend its lines to include Chase County wells. It has a lot of scattered production in western Kansas and will also purchase other oil.

Operators in the Ritz-Canton-Decker area in McPherson County have been notified by State Umpire C. H. Cooper that they may produce 100 per cent of the potential production of their wells until further notice, as purchasers had made nominations sufficient to warrant him giving the operators that allowable.

Operations in Hollow Pool

In the Hollow Pool, Harvey County, Empire Oil & Refining Co. has rig up for No. 1 Froese, SE cor. Section 7-22-3w.

The Shell Petroleum Corp.'s No. 3 Nikkell, SE SW SW Section 8-22-3w, was being rigged up with standard tools to complete. Misener sand was found at 3,413 feet and Hunton lime at 3,416 feet. Texas Co.'s No. 2 Androse, NE NW SW Section 8-22-3w, found chat at 3,168 feet, set 8-inch at 3,175 feet, and found sand at 3,200-05 feet and was rigging up standard tools. Derby Oil Co.'s No. 3 Schmidt, SE NW NW Section 17-22-3w, got the base of the Mississippi lime at 3,327 feet, Misener sand at 3,398 feet and Hunton lime at 3,403 feet and at a total depth of 3,405 feet was running 6-inch casing. Same company has rig up for No. 4 Schmidt, NE SW NW Section 17. Hollow and others' No. 2 Schmidt, an old well drilled deeper, NW NE NW Section 17-22-3w, plugged back to 3,585 feet and pumped 22 bbls. of oil and 15 bbls. of water per hour, from the Hunton lime. Skelly Oil Co. and Selby Oil & Gas Co.'s No. 3 Schmidt, SW NW NW Section 17-22-3w, set 8-inch casing at 3,397 feet and was rigging up standard tools. Hunton lime was found at 3,398 feet, total depth. Same operators' No. 4 Schmidt, NW SW NW Section 17, had started drilling. Sinclair Prairie Oil Co. has cellar dug for No. 2 Neufeldt A, CEL SE Section 18-22-3w.

Olson and Shell Petroleum Corp. are drilling at 2,230 feet in No. 2 Day, C NW NW Section 19-23-3w.

Hollow's No. 1 Hiedebrecht, SW SE NE Section 36-24-4w, which was drilled to a total depth of 3,673 feet, was plugging back to 3,339 feet. It had some gas showings. The hole was be abandoned.

Sinclair Prairie Oil Co.'s No. 1, NE cor. Section 18-22-3w, Harvey County, found Hunton lime at 3,339-82 feet, and Viola at 3,493 feet. The crew set 165 feet of 5-inch liner, perforated in the Hunton, and drilled to the Wilcox at 3,519-39 feet. The well swabbed 497 bbls. of oil, lowering the fluid to within 210 feet of bottom. The hole may be drilled deeper.

Frost, Study and others' No. 4 Martens, SW NW SE SE Section 19-22-3w, was drilling at 3,556 feet with 1,150 feet of oil in the hole. Top of the Wilcox sand was found at 3,548 feet and at 3,553 feet the oil appeared.

Mabee Drilling Co. and Shell Petroleum Corp.'s No. 2 Martens, SE NE SE Section 19-22-3w, an old well drilling deeper, set 6-inch liner at 3,457 feet and was drilling out plug. Same operators' No. 5, SW NW SE SE Section 19-22-3w, swabbed 822 bbls. in 24 hours with a showing of water, total depth 3,560 feet. There are 32 operations in Township 22-3w, including rigs, drilling wells and locations made.

In northeastern Harvey County, L. H. Wentz is spudding in a test on the Beetvater farm, SW SE SW Section 8-22-1e.

Use Acid on Stafford Test

In Stafford County, Atlantic Oil Producing Co.'s No. 1 Gates, Section 27-21-13w, was given 1,000 gallons of acid, and later swabbed 370 bbls. of fluid and 165 bbls. of water in 13 hours. The Atlantic Oil Producing Co. has made location for No. 1 Schneider, C NE SW Section 15-20-13w.

In Barton County

In Barton County, Stanolind Oil & Gas Co. was drilling at 1,330 feet in No. 1 Andrea, C SE NE Section 8-20-11w.

The Stanolind Oil & Gas Co.'s No. 1 Hauser, C NW NE Section 16-20-11w, found the top of the Siliceous lime at 3,286 feet, and drilled to 3,290 feet. Casing was run and the crew was waiting for cement to set. Same company's No. 1 Garlof, C SE SW Section 9-20-11w, found Siliceous lime at 3,295 feet, and drilled to 3,340 feet and got water. The well swabbed 65 bbls. in 20 hours. It may be acidized. Hilligoss and others' No. 2, C SW NE NE Section 12-20-11w, was running 6-inch pipe at 3,260 feet and will wait for cement to set.

Rice County

Garden and others' No. 1, C NW NW Section 11-21-7w, Rice County, found Kansas City-Lansing lime at 2,870 feet and drilled to 3,149 feet. The hole filled 2,000 feet with water and 300 feet with oil. It was bailed down but it was found that the casing sent leaked and the crew was underreaming 8-inch to 3,080 feet to get a shutoff.

Rogers and others' No. 4 Rainey, SE NW SE Section 3-21-6w, Rice County, flowed 880 bbls. the first 24 hours from chat at 3,267-97 feet. It is a completion.

Greenwood County

Miller & Gaines have spudded in No. 1 Elliott, C N half NE NW Section 18-26-9, Greenwood County. Shull Drilling Co.'s No. 2 Hinchman, NW NE SW Section 17-24-13, is a 20-bbl. well in the Mississippi lime at 1,580-1,600 feet. Dwyer and others have a machine in for No. 1 Wolf, SW SE NW Section 4-24-14, and Tom Palmer and others have started drilling No. 1 Naylor, NE SW NE Section 14-24-14. Location has been made for Ward & McGinnis' No. 1-A Ester, NW NE SW Section 36-23-10, and the same operators have started drilling No. 1-A Beal, SE NE NE Section 32-23-11. Harper & Dick's No. 4 Figge, SE cor. NW Section 28-23-14, found Mississippi lime at 1,617-52 feet, treated it with 1,000 gallons of acid and the well pumped 120 bbls. in 24 hours.

In Butler County, Hartman Oil Co. and others have a hole full of water in No. 1 McCann, SE SW NW Section 7-25-3, at 2,025-35 feet. Ten-inch casing was set at 2,044 feet. Water was found at 2,135 feet and the test was drilling at 2,175 feet.

In Sedgwick County, Faulkner and others have rig up for No. 1 Underwood, C SW SW Section 23-25-1w, and Holbart Oil Co. has ponds dug and material on the ground for No. 1 Gingrass, NE SW Section 8-24-1e.

In Reno County, Watchorn Oil & Gas Co. is rigging up No. 1 Soper, NE cor. Section 31-25-4w. Mylius and others have rig up for a wildcat test on the Patten farm, SE NE Section 35-23-5w.

Wildcat Operations in Kansas

(Descriptions are East unless marked otherwise)

Company, farm and location—	Remarks:
BARTON COUNTY	
Helmerich & Payne's No. 1 Everhigh, C SW SE Sec. 13-18-13w	Set 20-in. 85 ft.; drlg.
Rankin et al's No. 1 Soceg, C SW NE Sec. 34-18-12w	H.F.W. 3,538 ft.; T.D. 3,582 ft.; may P.B. and acidize.
Skelton et al's No. 1 Ott, C SE SE Sec. 16-19-14w	O.W.D.D.; T.D. 3,497 ft.; C.O.
BUTLER COUNTY	
Hartman et al's No. 1 McCann, SE SW NW Sec. 7-25-3.	Drlg. 1,357 ft.
Marylyn Oil Co.'s No. 1 Harsh, NE SW Sec. 35-23-5	Drlg. 2,000 ft.
COWLEY COUNTY	
E. Yarnell's No. 1 Speer, SE NE NE Sec. 31-33-6	Drlg. 1,400 ft.
ELLSWORTH COUNTY	
Rex Etnyre's No. 1 Arnsman, C SW SW Sec. 10-15-7w.	Rig.
GEARY COUNTY	
Ledaurie' No. 1 Fechner, C SE NE Sec. 27-13-8	S.D. 967 ft.
GRAHAM COUNTY	
Schleimeyer et al's No. 1 Smith, SE Sec. 24-8-25w	S.D. 4,180 ft.
KINGMAN COUNTY	
Garden et al's No. 1 Unknown. Sec. 11-27-7w	Drlg. 3,080 ft.
D. R. Lauck et al's No. 1 Church, SE SW NE Sec. 10-28-4w	Drlg. 1,120 ft.
MARION COUNTY	
Hutchinson Oil & Gas Co.'s No. 1 Miller, NW cor. Sec. 6-17-3	Drlg. 2,360 ft.
McPHERSON COUNTY	
Clum et al's No. 1 Nelson, C NE NW Sec. 12-18-4w	Drlg. 3,564 ft; H.F.W.
Sever and Hessman's No. 1 Scrag, 8¼ SE Sec. 23-19-4w	Rig on ground.
Gaume & Maxwell's No. 1 Goering, NE SE SW Sec. 24-22-3w	Rig.
Investers Mineral Dev. Co.'s No. 1 Kaufman, SE Sec. 25-21-3w	Rig.
Roth & Farout's No. 1 Swanson, NE SW NE Sec. 13-19-3w	Rig.
NORTON COUNTY	
Moody Seagraves' No. 1, NW Sec. 24-2-22w	Drlg. 1,150 ft.
PRATT COUNTY	
Minnescah O. & G. Co.'s No. 1 Hardesty, SW SE SE Sec. 28-27-11w	H.F.W. 4,417-27 ft.; pulled 5-in. pipe and P.B. and will acidize.
RENO COUNTY	
Mylius et al's No. 1 Patton, SE NE Sec. 35-23-5w	Rig.
Roth & Farout's No. 1 Yoder, C NW NW Sec. 15-24-5w.	C.O. 325 ft.
RICE COUNTY	
Langston et al's No. 1 Wells, NE SE Sec. 4-20-9w	T.D. 3,298 ft; H.F.W.; S.D. for orders.
ROOKS COUNTY	
Kruger's No. 1 Rathburn, SE NW SW Sec. 14-9-16w	Rig.
SUMNER COUNTY	
Deal O. & G. Co.'s No. 1 Tompkins, SW cor. Sec. 26-33-1.	Fishing 3,730 ft; set 6-in. csg. at 3,730 ft; C.O. will acidize other showings.
WOODSON COUNTY	
F. Fields' No. 1 Munson, SW NE SW Sec. 9-25-14	Drlg. 500 ft.

Zwolle, Converse and Monroe Gas District Had All the New Production in Louisiana Fields

By D. H. BANCROFT
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Aug. 7.—With many wells throughout North Louisiana still shut down on account of flood waters resulting from the unprecedented rains of the week before, activity in that part of the Shreveport district showed little change though there were the usual number of new locations and a better showing by wells completed.

All the new production was from Zwolle and Converse districts of Sabine Parish and in the Monroe gas field. The prospective new gas area in Catahoula Parish, Louisiana, in the Conroe-Jackson trend play repeated the experience everyone who has drilled in that part of the state has had, considerable gas and considerably more salt water. Acid treatment of two wells in the Monroe gas field resulted in a very large increase in their open flow but it remains to be seen how long the improvement will last.

George Greer and others' No. 1-B Louisiana Central Lumber Co., Section 2-9-6, Catahoula Parish, blew in with an estimated 10,000,000 feet of gas and 5,000 bbls. of salt water, total depth 3,016 feet, but since casing was ripped twice after a dry test at that depth and then shot still higher up, there is some uncertainty as to where either the gas or the water is coming from. Meanwhile efforts are being made to kill the flow and abandon the well for fear of its cratering. No. 1 on the same lease, behaved the same way on completion at 2,744 feet and bridged and was successfully capped, though it is being allowed to blow since breaking out the bridge lest it, too, crater now that No. 1-B a few feet west has repeated its performance. Terrell & Price's No. 1 Louisiana Central Lumber Co., NW NE Section 18-11-3e, Caldwell Parish, also in line of the Conroe-Jackson trend, was abandoned as a duster at 1,403 feet.

George L. Pace abandoned No. 1 Cole, Section 11-11-11, Dolet Hills district of DeSoto Parish, at 3,005 feet and skidded a few feet to make a new hole after a salt water test. United Gas Public Service Co.'s No. 2 U. S. Government, Section 1-19-3e, Ouachita Parish, gauged 6,660,000 feet of gas at 925 pounds from 2,165 feet after a shot of acid. The same company's No. 28 Crossett, Section 27-21-4, Morehouse Parish, completed a month ago at 2,150 feet making 2,000,000 feet of gas, responded to acid treatment by gauging 27,144,000 feet of gas and No. 1 fee 101, Section 7-20-4, Union Parish, made 29,304,000 feet of gas at 815 pounds rock pressure after acid treatment at 2,147 feet.

Converse District

Helena Oil & Gas Co. added the eighth to Converse district, Sabine Parish, list of producers when No. 1 H. A. Pugh, SE SE Section 18-9-13, half a mile north of the discovery well and approximately 1½ miles west of the center of production, started flowing 45 bbls. by heads through 2½-inch tubing from a total depth of 2,043 feet after plugging back to 1,780 feet where it had showed for about 15 bbls. and using acid. Bryant & Lucas' No. 1 Andries, NW SE Section 15-7-11, Zwolle district of Sabine Parish, made 480 bbls. through choke from 2,518 feet. Pugh-Hickman Drilling Co. abandoned location for No. 1 Woods, SW SW Section 30-8-12, Zwolle. Ben Merritt's No. 1 H. A. Cook, SE SE Section 34-8-11, pumped 35 bbls. from 2,560 feet and A. L. and J. E. Waller abandoned No. 1 J. A. Green, NE NE Section 24-8-12 as a dry hole at 2,535 feet. C. G. Hoff and others' No. 1 Pressley, SW SE Section 2-3n-12, a wildcat in the extreme southwest corner of the parish, is an abandoned location.

In Miller County, Arkansas, J. T. Humphreys abandoned No. 1 Grace, Section 9-15-27, after setting 10-inch surface string at 206 feet three months ago. Sorrell & Tidwell's No. 1 Roy McCowan, NW SE Section 22-15-28, as a dry hole at 3,015 feet. This wildcat was formerly listed as Jule Alford's No. 1 McCowan. R. E. Collins and others' Seveier County test just south of DeQueen, is dry and abandoned in hard shale at 1,725 feet.

All but one of the 12 new locations staked this week were in Louisiana, the twelfth being Wingfield & McCurry's No. 1 Beasley in the SE NW Section 35-17-15, Union County, Arkansas, in the old El Dorado Field. Two of the Louisiana locations were in the old Caddo area, one in the Ouachita Parish section of the Monroe gas district, five in Zwolle and one in Webster Parish. Calatex Oil & Gas Co. set 10-inch at 266 feet on No. 1 G. M. Agurs, NE NE Section 9-16-16, Blanchard gas district of Caddo, and was drilling at 1,800 feet. E. W. McGoldrick made location for No. 1 Murray, NE SW Section 14-21-15, Oil City district of Caddo. George L. Pace has derrick up for No. 1-B Cole, SE NE Section 11-11-11, DeSoto Parish, 50 feet east of No. 1 referred to above. Hirshfield-Bailey interests have rig up to drill No. 1 Mickie in the SE SE Section 7-13-12, DeSoto Parish, abandoned three months ago by DeSoto Development Co. after they got derrick up. Century Carbon Co. has derrick up for No. 1 McGee, Section 10-18-4, Ouachita Parish, the first well they have drilled in many months and another straw that is showing which way the wind is blowing with respect to need of developing more gas to supply the pipe lines leading out of Louisiana, as well as carbon plants in the Monroe-Richland district.

Magnolia Petroleum Co. made location for No. 1 H. I. Gingratt, SW NW Section 30-8-11, Zwolle district of Sabine Parish. Williams & Spier have derrick up for No. 1 C. W. Marr, NW NE Section 7-7-10, Zwolle. Cummins Oil Co. has derrick up for No. 1 T. M. Phillips, NE NE Section 15-7-11, and J. E. Boyer and others' No. 3 Barthold, SE NE Section 35-8-12, is a derrick. No. 2 is a blind location and No. 1 was completed as a 75-bbl. producer by Lanier & Dyer after a shot of acid. E. F. Neely has rig up on No. 7 S. D. Ponder in the NW SW Section 15-7-11, Dorcheat Syndicate made location for No. 2 Good Pine Lumber Co., SE SW Section 35-22-10, Webster Parish, its third test on a block about 4 miles northeast of Cotton Valley production on which they have drilled two dry holes that at first showed for commercial production.

NORTH LOUISIANA

Bailey Gantz and others' No. 1 Jenkins, SE SW Section 35-13-12, DeSoto Parish, made a show for about 15 bbls. of oil and was bailing to test, total depth 3,090 feet. E. T. Oakes and others have done nothing with No. 1 Bryant and others, Section 30-13-15, DeSoto Parish, since the derrick collapsed a week ago under weight of 4,600 feet of drill stem resting on a rain-weakened foundation. J. C. Prine, of Mobile, Ala., has taken over V. E. Shaw's No. 1 W. J. Hill, SW NE Section 4-10-13, Benson district of DeSoto Parish, where there has been plenty of shows of both oil and gas in the last 10 or 12 years, two wells having come in out of control and caught fire, and while the wildcat is shut down at 150 feet and has been for three months, it is understood operations will be resumed in the near future. B. A. Sherrell and others' No. 1 fee, NW NW Section 18-19-11, Bellevue shallow district of Bossier Parish, is drilling at 1,800 feet on a deep test. In the same territory H. I. Morgan's No. 2 Smith, the deepest hole yet drilled in Shreveport territory, structurally speaking, is shut down by high water at 5,172 feet. United Gas Public Service Co.'s No. 1 Durritt, NE SE Section 31-20-5, Sugar Creek gas district of Claiborne Parish, is drilling at around 4,300 feet with 9-inch cemented at 4,227 feet and No. 1 Meadows, Section 13-21-5, the Lisbon deep test, is shut down at 6,710 feet. A. C. Thomas and others' No. 1 Johns, NE NE Section 25-15-3, Jackson Parish, a 4,200-foot test on a 12,000-acre block, was drilling at 1,675 feet.

United Gas Public Service Co. used acid on No. 2 Patton, Section 12-20-4, Morehouse Parish, at 2,212 feet and was waiting for results; No. 2 Taylor-Sandidge in the same section which tested 200,000 feet of gas at 2,234 feet a month ago is in the same situation. G. W. Hindman's No. 1 Long-Bell Lumber Co., NE NW Section 30-3n-2w, Rapides Parish, another Conroe-Jackson trend test, was drilling at 1,360 feet.

John Bettis and others' No. 1 Shull, NE SW Section 26-8-12, Zwolle district of Sabine Parish, was dry after a show of oil at 2,420 feet and is waiting orders. Mid-Continent Crude Oil Purchasing Co. gave No. 1 Louisiana Long Leaf Lumber Co., SE SE Section 12-7-11, a shot of acid at 2,875 feet after a dry test and is waiting for results. Pelican Natural Gas Co. will deepen No. 23 Louisiana Long Leaf Lumber Co., SW SE Section 27-8-11, after a dry test at 2,402 feet. Southland Drilling Co.'s No. 1 Frost Lumber Co., NE NE Section 13-9-11, Marthaville district of northeastern Sabine Parish, was arranging for a drill stem test at 3,905 feet.

In the Converse district of Sabine Parish, R. L. Gay's No. 1-B Bowman-Hicks Lumber Co., SW NE Section 22-9-12, was drilling at 1,591 feet. Mamie S. Hammonds and associates were rebuilding derrick on No. 1 Patrick, SE SE Section 1-9-13, 3 miles northeast of production, preparing to resume operations after temporarily abandoning the hole at 3,235 feet. H. C. Lessenger's No. 1 Bowman-Hicks, SW SW Section 13-9-13, was drilling at 2,865 feet.

ARKANSAS

C. W. Alworth was coring the Arkadelphia at 1,712 feet, corrected depth, on No. 1 King, SE SW Section 16-17-20, Columbia County. Paul G. Benedum set 403 feet of 12½-inch surface string on No. 1 Harmon, a deep test in the center of Section 25-19-24, Lafayette County, and was drilling at 2,310 feet. George W. Harper's No. 1 Reed-Bodcaw Lumber Co., SW NW Section 16-15-22, was drilling at 1,857 feet. In Miller County Duluth-Arkansas Oil Co. had rig up for its third test in the Texarkana district, where it has one small producer and one dry hole, No. 2 Beck, SE SW Section 34-15-26, a quarter-mile southwest of the producer.

Daily Average Runs

Daily average runs from the field from the territory as a whole showed an increase of 3,725 bbls., due practically entirely to shipments of Smackover heavy oil. Louisiana runs, totaling 24,610 bbls., were 1,430 bbls. less than last week but Arkansas, on a total of 37,475 bbls., showed an increase of 5,155 bbls. Daily average runs from the several pools were:

NORTH LOUISIANA

	Bbls.
Caddo light	4,905
Caddo heavy	1,485
Converse	275
Cotton Valley	480
DeSoto-Red River	1,550
Elm Grove	305
Haynesville	2,755
Holly	190
Homer	2,660
Pleasant Hill	235
Sarepta-Carterville	780
Urania	2,530
Zwolle	7,360
Total	24,610
Last week	26,040
Decrease	1,430

ARKANSAS

Champagnolle	1,330
El Dorado	2,620
Lisbon	400
Miller County	50
Nevada County	525
Smackover light	2,570
Smackover heavy	27,835
Stephens	620
Urbana	1,525
Total	37,475
Last week	32,320
Increase	5,155
Both states	62,085
Last week	58,360
Increase	3,725

Wildcat Operations in Louisiana-Arkansas

(Rotary operations unless otherwise designated)

North Louisiana

AVOYELLES PARISH

Company, well, farm name, section and block— Remarks:

Gary Prevenson's (was Bud Harrell et al) No. 1 Haas, 330 ft. N and W, SE cor. SW SW Sec. 9-1s-3e ..... Derrick.

BOSSIER PARISH

J. A. King et al's (was A. W. Phillips, tr.'s) No. 1 Oden, 300 ft. W, 150 ft. N, SE cor. NW NW Sec. 4-13-12 ..... S.D. 1,704 ft.

Dr. C. R. Reed, tr.'s No. 1 C.J.&B., Sec. 18-16-11 ..... Rigging up.

B. A. Sherrell, tr.'s No. 1 fee, NE NW NW Sec. 18-19-11 .. Drlg. 1,800 ft.

CADDO—BLANCHARD

Calatex O. & G. Co.'s No. 1 G. M. Agurs, 331 ft. S, 680 ft. W, NE cor. NE NE Sec. 9-16-16 ..... Began drlg July 24; 10-in. 266 ft; drlg. 1,800 ft.

CADDO PARISH

J. B. Hutchinson, tr.'s No. 1 Story Phillips, 330 ft. N and E, SW cor. SW NE SE Sec. 28-16-13..... Drlg. 165 ft.

J. T. Humphrey et al's No. 1 Powell, 330 ft. N and E, SW cor. NW SE Section 14-19-15 ..... Derrick.

John F. Kerper's No. 1 Barron, 350 ft. N and W, SE cor. NE SE Sec. 27-16-14 ..... S.D. account high wtr. 1,937 ft.

(Continued on Page 66)

Magnolia Opens New North Duval County Pool Northwest of North Government Wells Pool

By B. D. STEVENSON
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Aug. 7.—North Duval County has a new pool, as yet unnamed. A few weeks ago Magnolia Petroleum Co. brought in No. 1 Duval County Ranch Co., 330 feet from south and east lines of the northeast quarter of Survey 363, for a 95-bbl. pumper at 2,259-64 feet. Last week Reynosa Oil Corp. brought in its No. 1-A, a diagonal southeast offset to the Magnolia test and No. 1-B, a little over a quarter mile south of the Magnolia well, each of them reported on estimate as 400 bbls. daily each. There are no storage tanks on the lease and the wells are ungauged but many good judges believe they will make much more than 400 bbls. daily and will be around the size of the best wells in the North Government Wells Pool, a few of which make 90 and 100 bbls. an hour.

The new field is about 2 miles northwest of the North Government Wells Pool and the trend of all the pools in that part of the Laredo district is northeast and southwest and hence it is naturally expected that the new pool will do the same and will overlap the North Government Wells Field on the west but will not merge with it. The sand depth is practically the same as in the North Government Wells Pool but it seems probable according to the new idea of the geology of the district that it is a different and lower sand member than that of the North Government Wells Pool.

Two Wells Completed

Reynosa's No. 1-A is reported completed at 2,261-69 feet and No. 1-B at 2,283-93 feet. Both wells have been on the sand ready to complete for a couple of weeks waiting for the closing of a deal whereby Reynosa purchased from William B. Stewart and associates the east half of the southeast quarter of Survey 363 on which was Stewart's No. 3, now changed to Reynosa's No. 1-B. That deal was closed and Reynosa, in addition to that 80 acres, owns the north half of the southwest quarter of Survey 362 on which No. 1-A is located.

Stewart owns the west half of the southeast of Survey 363 and the south half of the southwest of 362 and the northeast quarter of 362. All the rest of the acreage that by any stretch of imagination can ever be included in the new pool is owned by four major companies, Sun, Magnolia, Texas and Humble. Sun Oil Co. owns the most. The surveys for the most part are 640 acres and Sun owns the seven-eighths mineral deed on everything for 2 miles south, and if the field runs anywhere it looks as though it would run down through the middle of this. Sun owns Survey No. 361, next south of 363, and 365, next west of 361. Also No. 55, next south of 361, and No. 53, next west of 55, and also No. 359, next east of 361 and south of 362. On the east end of this survey, which is more than a mile long east and west and contains more than 640 acres, Sun has four producing wells that are in the north end of the North Government Wells Pool.

The Texas Co. owns the southeast quarter of 362 and the southwest quarter of 363 and it seems a good guess that one is too far east and the other too far west. Humble owns the northwest quarter of 362 and must drill a north offset to Reynosa's No. 1-A. Magnolia owns the north half of 363 and all the acreage north of 363 and 362.

Stewart secured his acreage from Magnolia and his No. 2 in the south half of the southwest quarter of 362, a gas well in the Cole sand at 1,557 feet, is what started the developments leading to the opening of the new pool. Reynosa has made location for its No. 2-A, 660 feet south of its No. 1-A, and also for No. 2-B, 660 feet south of the Magnolia well and 990 feet north of No. 1-B.

There is a possibility that Magnolia's well in 363 is not deep enough and that it stopped on a cap rock and by deepening may make as big a well as the others.

A new theory on the geology of the Laredo territory was advanced at the meeting of the San Antonio Geological Society Monday night by Hershel H. Cooper, based on a study of shore lines and sediments that may greatly change the methods of hunting oil down through Duval and Webb Counties. The theory would discard to a large extent the structure theory.

Wildcatting in Duval and McMullen

Wildcatting in northern Duval and southern McMullen has greatly declined of late. De Soto Oil Co.'s No. 1 Wood-Welder, 3 miles northeast of the North Government Pool, and not only directly in the trend but 660 feet east of a dry gas well in the Government Wells sand and with no dry holes between it and the field, is down about to sand depths and should return a verdict soon.

In southern McMullen, S. R. & C. Oil Corp. and Sinclair Prairie Oil Co.'s No. 1 Reeves is drilling and Shumway's No. 3 Shiner, shut down for some time at 1,910 feet, is resuming. Otherwise there is no activity except in the northeast corner of the county.

Farther south in Duval County, Conway & Campbell, after getting a good supply of water at 26-320 feet in their No. 1 Hoffman, 5 miles southeast of the Sarnosa Pool, called it a day for they were badly in need of water. It was completed as a water well and No. 1 was started again 40 feet northwest. With an ample supply of water it made good headway and was below 1,000 feet at the close of the week.

It looked for a time as though the northeast end of the North Kohler Pool (formerly called Peters) was going to do something important when Duggan's No. 1 Sutherland had a showing in a new sand a little deeper than the Government Wells sand in the Sarnosa Pool and in the gas wells of the North Kohler, but it was abandoned as a failure the past week at 2,701 feet. On drill stem test it had shown quite a little oil in sand at 2,577-81 feet which is over 100 feet deeper than Brooklyn Oil Co.'s No. 1 in the same survey a half mile south that made a big gas well and a considerable volume of oil.

Starr County

There is to be a 3,000-foot test in the vicinity of the Los Olmos shallow pool in Starr County which will be deep enough to take in the sand that is producing in Sun Oil Co.'s discovery well in the northwestern part of the county. Sun got production at 2,208-32 feet and the new test in the Los Olmos shallow pool should get it at somewhere near the same depth. The new test is Hooks, Weaver & Swallow's No. 1 Kelsey Bass, 150 feet from the north line and 600 feet from the east line of the NE NW Section 8 of the Kelsey Bass Subdivision of Porcions 75, 76 and 77 in the jurisdiction of Camargo.

It was reported that Sun abandoned No. 1-B Guerra at 3,330 feet and that No. 1-C Guerra after deepening to 2,380 feet was plugged back to the gas sand at 2,180 feet and recompleted as a gas well but information from Rio Grande City is that it is still drilling deeper. No. 1-A discovery well is still closed in and the expectation is that Sun will make some additional locations.

Great Plains' No. 1 Sanches which has stood at 2,300 feet for the past few months is starting up again. It is on a block of considerable size and is scheduled for 4,500 feet or production. Jeffries-Lambeth Drilling Co.'s No. 1 Starr County Cattle Co. in the eastern part of the county got casing on the ground the past week to make a test of sand at 2,455-60 feet that showed up good on a drill stem test. Counting wildcat tests, one with another and the general average, the industry familiar with the conditions of this well are expecting it to make a good account of itself when it drills in. It is rated above the average very considerably. It is 8 miles northeast of the Rio Grande City Pool which is the nearest production and had a sand above this at 2,141-49 feet estimated good for 30,000,000 feet of gas.

Balcones Fault Zone

With the abandonment of W. J. Walton's No. 1 Hoffman in Guadalupe County the Balcones Fault zone in that sector is left without anything except the Lanier shallow test in the northern part of Guadalupe County. It is the first time Guadalupe has been left with such few tests in years. Walton got a little showing of oil in a lot of sulphur water in the Edwards at 2,658-77 feet. The same week the J. A. Harper shallow test near New Berlin in western Guadalupe was abandoned at 800 feet.

C. W. Boler's No. 1 Kearney in southern Bexar County late in the week was coring at 1,451 feet and expecting any minute to get the Edwards. In Zavala County the deep test of Zavala Oil & Gas Co. after finishing a fishing job is still shut down and Amerada in Frio County is still drilling for water and has not started its deep test for the Edwards lime.

Continental Oil Co. has a block of acreage north of Pearsall in Frio County and has put a crew in to shoot it with geophysics. The block is about 5,100 acres.

In the upper reaches of the Balcones Fault zone activity still centers in the Serpentine search but the past week other than the abondonment of Marts & Beavens' No. 1 Orgain at 1,831 feet there has but little transpired. It is the first test drilled since their discovery well, No. 1 Reyes, was completed in Serpentine for 175 bbls. daily on the pump.

In Caldwell County, Thomson's No. 1 Rodenberg was also abandoned after the hole was lost. It is an Edwards lime test. A new location has been made.

In Caldwell County stake was driven the last week for C. J. Webster's No. 2 McCrory southwest of the Dale Field and a little east of No. 1-A McCrory that came in an oil producer in a crevice.

Wildcat Operations in Southwest Texas

Week Ending August 5

Company, well, farm name, section and block—	Remarks:
ARANSAS COUNTY	
Harry Traylor's No. 1 Dietzel, 330 ft. from SW and SE lines of 30-ac. tract in J. Smith Sur.	Moving in rig.
ATASCOSA COUNTY	
A. Blume's No. 1 Shaw, 690 ft. from N line, 1,780 ft. from E line of 100-ac. tract in W. Farquhar Sur. No. 275	T.D. 1,996 ft; twisted off D.S.
E. C. Burton's No. 1 Smith-Mowinkle, 2,100 ft. from N line, 200 ft. from W line of F. Perez Sur. No. 172	T.D. 560 ft.; drlg.
BASTROP COUNTY	
Adams & Lyles' No. 1 Peter Goertz, 1,075 ft. from N line and 250 ft. from W line of 40-ac. tract in Andrew Mays Sur.	T.D. 2,522 ft.; S.D.
Detroit Texas' (M. O. Rayor) No. 1 J. W. Miear, 150 ft. from N and E line of 62-ac. tract in McMillam Sur.	T.D. 2,200 ft; drlg.
J. E. Emanuel's No. 1 H. Klemm, 817 ft. from W line, 800 ft. from S line of tract in R. S. Teal Sur.	T.D. 850 ft; standing.
Ca-Tex O. & G. Dev. Corp.'s No. 1 Harris, 150 ft. from NW line, 3,000 ft. from SW line of John Maxmillan Sur.	T.D. 2,312 ft; resumed drlg.; to go to Edwards.
Ca-Tex O. & G. Dev. Corp.'s No. 1 Pendergrass, 1,343 ft. from NE, 310 ft. from SE line of 130-ac. tract in Henry Warnell Sur.	Built road to location.
Hinton & Dodson's No. 1 Moncure, Highsmith and Burton Surveys, in M. Rosseau League, 8 mi. SW from Bastrop	Spudded in.
Three Oil Co.'s No. 1 M. Ingram, 1,250 ft. from SW line, 940 ft. from SE line of tract in M. Morgan Sur.	Derrick.
BEE COUNTY	
Nichols & Bruner's No. 1 Grover Heldenfels, 491 ft. to S line, 1,950 ft. to E line of 837-ac. tract survey, John Bryan, 4 miles S from Beeville	T.D. 5,000 ft; drlg.
BEXAR COUNTY	
Amsden & Foster & Amsden's No. 1 S. A. Irrig. Farms, 600 ft. E of Kinney Road, 1,500 ft. N of Elm Creek	T.D. 1,200 ft.; standing.
O. N. Beer's No. 1 S. W. Kearney, 150 ft. from S and E lines of 28-ac. tract in S. C. I. Perez Sur.	T.D. 1,360 ft.; drlg.; expect Edwards soon.
A. M. Blume's No. 1 Ridder, 300 ft. from W line, 1,000 ft. from N line of tract in Sur. No. 58, County Blk. 1,596	Resumed drlg.; blew surface csg.
R. S. Boling's No. 1 J. J. Appelt, 150 ft. from N and W lines of tract in M. Uriegas Sur.	T.D. 330 ft; rig moved off.
F. J. Von Delden et al's No. 1 Frank Webber, 150 acres in J. Montes No. 6	Rigging up; spudded.
Dingman's No. 1 Cassin, 175 ft. from N. 120 ft. from W line of 1,250-ac. tract in Rodriquez Sur.	T.D. 1,201 ft; reaming at 370 ft. to set csg. at 1,100 ft.
Austin Hull's No. 1 Classen, 268 ft. from W line, 2,500 ft. from S line of tract, 12 miles N of San Antonio	T.D. 1,810 ft; trying to run csg.
LaSalle Oil Co.'s No. 1 City Sewage farm, 150 ft. S of Rilling Road, 450 ft. W of NE cor. of tract in D. Bustillos Sur.	T.D. 75 ft.; drlg.

(Continued on Page 63)

Southeast Trend of Tomball Field Apparently Borne Out by 59 Barrel an Hour Producer

By NEIL WILLIAMS
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Aug. 7.—The southeast trend theory of the new Tomball Field of northern Harris County, apparently is being borne out by the completion of Humble Oil & Refining Co.'s No. 1 Reid, Chauncey Goodrich Survey. This well, the best in the field to date, is 1,500 feet southeast of the discovery well, and came in flowing 59 bbls. an hour through a half inch choke with bottom of hole at 5,565 feet. It gauged a pressure of between 750 and 950 pounds. Previous developments in the field have not been entirely favorable for the proving up of a field of sizable proportions.

This is one of two wells just completed at Tomball, the other being Humble Oil & Refining Co.'s No. 1 Doege, a half mile northwest of the discovery well in the Chauncey Goodrich Survey (Abstract 311), which came in over the week end as a gasser making 2,300,000 feet daily with 1,700 pounds pressure through a quarter-inch choke from sand at 5,586 feet.

Two additional wells, Magnolia Petroleum Co.'s No. 1 Rudel, Joseph House Survey, and Continental Oil Co.'s No. 1 Petrich, east offset to the Rudel well, are in process of completion, both having drilled plugs preparatory to setting screen. The Rudel well first was completed early in July as a dry gasser at 5,528 feet. It since has been deepened to 5,610 feet where it went into water and has been plugged to its present depth of 5,553 feet. The Continental well is in oil sand at 5,587 feet with the 7-inch casing seated at 5,568 feet.

Another well, Humble Oil & Refining Co.'s No. 1 Emil Schultz, John H. Edwards Survey, located three-quarters of a mile northwest of the discovery well, also is about on the pay sand. At latest report it was coring in sand and shale below 5,500 feet. This well also is about a half mile due north of Humble Oil & Refining Co.'s No. 1 Martens, W. Hurd Survey, completed early last month as a gasser. It since has been making some fluid, which has increased to around 35 bbls. daily of distillate and some water. The Kobs discovery well and its offset, No. 1 Fritz Kobs, are the only other wells in the field so far. Both of them are making a little water.

Humble has completed derricks for two additional tests, No. 1 Bloecher, J. N. Hooper Survey (Abstract A-375), northeast of the discovery wells, and No. 1 Gebhart, C. W. Hahl Survey, 6,500 feet southeast of the discovery well. The Texas Co. is reported to have taken out permits for 10 locations.

Greta Field

Production of the new Greta Field in Refugio County, lower Gulf Coast, was extended over 1,000 feet southwest by the completion of Dash Production Co.'s No. 1 J. M. O'Brien, N. S. Crunk Survey, which came in flowing at the rate of 37 bbls. an hour, through a three-sixteenths and a quarter-inch choke, from sand at 4,388 feet. It gauged 1,350 pounds on the tubing and 1,600 pounds on the casing.

This is the fourth producer to have been completed at Greta, whose total daily output now is better than 4,100 bbls. Production of all the wells is holding up consistently with no appearance of water, the runs for the 24-hour period ending at 7 a.m. August 5 being: Greta Oil Corp.'s No. 1 O'Brien, 740 bbls.; Alamo Oil Co.'s No. 1 O'Brien, 1,157 bbls.; Southwestern Oil Corp.'s No. 1-A O'Brien, 1,328 bbls., and Dash Production Co.'s No. 1 O'Brien, 899 bbls. These total 4,124 bbls.

A fifth well is in process of completion with Alamo Oil Co. setting screen in its No. 2 O'Brien, 1,200 feet north of production. It cored sand showing oil to a total depth of 4,403 feet, which is the same depth, within a foot or two, of all the other wells except Dash Production Co.'s O'Brien producer, whose bottom is 4,388 feet. Blanco Oil Co.'s No. 1-A J. J. O'Brien is scheduled for the sixth well, it having topped the pay horizon and at a total depth of 4,359 feet is standing with 7-inch casing cemented at 4,348 feet. After drilling plug it will core deeper. The latter company's No. 1-B J. M. O'Brien has drilled into the cap and shortly should be in the pay.

Both Atkins & O'Neil's No. 1 Welder, J. T. McGrew Survey, 2½ miles northeast of the field, and Vidauri Oil Co.'s No. 1 Welder, at Vidauri, a mile farther northeast, seem definitely out of the picture. The former, however, at latest report still was drilling deeper, being in a hard sticky shale at 5,585 feet, while the Vidauri test was shut down around 5,200 feet. The latter depth, however, is uncertain as information on the test is being withheld.

Atlantic Pipe Line Co. has completed its new 6-inch line from the Refugio Field to Greta, a distance of 9 miles, giving the latter field its first pipe line outlet. As yet the line is not in use, there being no open oil available, but Atlantic Oil Producing Co., which recently acquired important holdings in the field, is starting several tests and ample crude for the capacity of the line should be supplied shortly.

Caillou Island

The Texas Co. apparently has established commercial production on its Caillou Island Dome, in the coastal marshes of southern Terrebonne Parish, Louisiana. Its No. 2 State-Caillou Island, completed two weeks ago as good for 2,300 bbls. daily through a half-inch choke from a flank sand at 5,981 feet, has held a consistent flow. This is the second well completed on the dome, but the first, No. 2 State-Caillou Island, brought in early in 1930, flowed only a short time and a little later was abandoned. The latter was in a shallower sand at 3,243 feet. Exclusive of the new producer, six tests have been drilled on the dome, which is one of a group of geophysically discovered domes which the Texas Co. is developing simultaneously in southern Terrebonne Parish. Three of these, Lake Barre, Lake Pelto and Caillou Island, now are productive of oil; production has been found on another, Dog Lake; while a fifth, Bay St. Elaine, has yielded a couple of gas wells, which now supply fuel for other drilling operations.

At Gueydan

At Gueydan, Vermillion Parish, Louisiana, Pure Oil Co. has completed its No. 4 Alliance Trust Co. as the field's fourth producer, extending the field to the northeast. The well came in flowing 575 bbls. daily through a seven-sixteenths inch choke from sand at 3,565 feet where 105 feet of 7-inch screen was set. All other production in the field is below 4,000 feet.

Completions

Other completions on the coast included nine new wells at Conroe, two at Thompson, five at Barbers Hill, and one at Saratoga, indicating one of the most active weeks in recent months. The increase at Barbers Hill is a reflection of the activity which is going on there in deepening shallow sand wells to deeper horizons. Three of the completions at Conroe were edge wells on the extreme northeast side of the field, these wells being Humble Oil & Refining Co.'s No. 5-B Hirsch, No. 1 Woodson and No. 1 A. G. Rogers, all in the C. A. West Survey. The latter made a dry gasser.

Conroe Pipe Line

Another pipe line outlet for Conroe is to be provided by Sun Pipe Line Co., which is planning on a 6-inch line to extend from the field to Humble, a distance of 17 miles. At Humble the new line will tie into the company's Gulf Coast gathering system. This will make the fifth pipe line outlet for the field, not including Magnolia Pipe Line Co. and the Sinclair-Texas Pipe Line Co. lines which pass through the field but which as yet have made no connections.

Livingston District

At Livingston, Polk County, Dick Schwab put his No. 1 Allen and Hilbarger (Craig) back on production after resetting screen on bottom at 4,337 feet. The screen, since completion of the well June 9, has been 9 feet off bottom at 4,328 feet. The well originally was completed at the latter depth but in an effort to improve production at that time operators drilled through the back pressure valve with a diamond bit on the tubing to a total depth of 4,337 feet, where the well has been flowing with 9 feet of open hole. When production dropped off sharply a couple of weeks ago from a daily average around 700 to 800 bbls. down to below 200 bbls., the well was killed, screen pulled and the hole reamed to bottom, where screen has been reset.

A flock of new tests are planned in the Livingston district. Dick Schwab is rigging up on his No. 2 Allen and Hilbarger, located 660 feet west of No. 1. Shell Petroleum Corp. has made locations for four tests, one each on the W. Munson, Oscar Munson, J. W. Kimes and Jim Duff tracts. Refugio Oil Co. is due to spud in its test, nearly a mile southeast of the field, as is Sunby Drilling Co. on its test three-quarters of a mile east of the field. There are a half dozen other locations but some of these may never be drilled.

Nearly 100 Permits

Nearly 100 permits have been taken out for locations scattered over the Texas and Louisiana coasts within the past two weeks. These include not only many wildcats but locations around proven and semiproven fields. However, a large part of the locations have been made in view of possible Federal and state restrictions against new drilling and it may be a long time before drilling is started on them.

Montgomery County

Showers & Moncrief's much watched wildcat on the Rohlf tract in the Daniel Garrett Survey (Abst. 224), southern Montgomery County, found the Cockfield carrying salt water and at a total depth of 5,521 feet, 90 feet in that horizon, it now is shut down. The test is 6 miles north of Indian Hill Oil Co.'s No. 1 Schweinle, first Cockfield sand test in the Tomball-Huffsmith district. gas showings in which were the incentive for Tomball lease play.

Fostoria Oil Co.'s No. 1 Foster, in the extreme eastern part of Montgomery County, in the southeast corner of the H.&T.B. Survey No. 2, also met failure in the Cockfield at a total depth of 5,580 feet and has been abandoned.

Harris County

Among abandonments was Jack Schultz and associates' No. 1 Woodburn on the

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Gulf Coast Fields and Wildcats

Week Ending August 5

DAMON MOUND—BRAZORIA COUNTY

Company, farm and location—	Remarks
Intercoastal Oil Co.'s No. 11 Wisdom, 350 ft. E of No. 6, Blk. 51, Lot D, A. Durst Sur.	No report.
Sinclair Prairie Oil Co.'s No. 31-A Bryan, 155 ft. N, 45 deg. E of SW cor. of Blk. 28, Masterson Subd., and 140 ft. S, 45 deg. E, A. Darst Sur.	T.D. 7,586 ft; drlg. sidetracked hole 3,610 ft.

MANVEL—BRAZORIA COUNTY

Texas Co.'s No. 6 Belcher, H. N. Little Sur., South 42° W 2,400 ft. and S 48° E 400 ft. from N cor. lease	Reaming to set 13⅜-in. csg. 1,178 ft.
The Texas Co.'s No. 2 Davis, 300 ft. out of S cor. Lot 42, H. N. Little Sur.	T.D. 5,674 ft; reaming.

BARBERS HILL—CHAMBERS COUNTY

Mills Bennett Prod. Co.'s No. 4-A Barber (W.O.), Henry Griffith League	T.D. 5,143 ft; rig up to W.O.
Mills Bennett Prod. Co.'s No. 1-C Barber, Henry Griffith League, 100 ft. E, 20 ft. N of SW cor. of tract.	Drlg. salt 2,548 ft.
Mills Bennett Prod. Co.'s No. 4 Kirby (W.O.), Henry Griffith League	T.D. 5,049 ft; comp. 500 bbls. dly.
Mills Bennett Prod. Co.'s No. 5-A Wilburn (W.O.), Henry Griffith League	T.D. 5,170 ft; comp. producer.
Sinclair Prairie Oil Co.'s No. 8 Wilburn (W.O.), Henry Griffith League	Deepened from 4,962 ft. to 5,230 ft.; swbd. S.W.; pulling screen.
Sinclair-Prairie Oil Co.'s No. 14 Wilbur (W.O.), Henry Griffith League	Set 189 ft. of 5-in. O.D. screen 5,661 ft; comp. dry gas well; now making 10 bbls. oil; 610 lbs. pressure; ½-in. choke.
Sun Oil Co.'s No. 11 J. Wilburn (W.O.), Wm. Hodges Sur.	Pulling screen to deepen 2,610 ft.
Sun Oil Co.'s No. 12 Wilburn (W.O.), Wm. Hodges Sur.	Set 73 ft. of 4-in. screen 5,127 ft.; swabbed some fluid and sanded up; pulling screen.
Sun Oil Co.'s No. 17 Wilburn, Henry Griffith League, 150 ft. W of No. 4 and 50 ft. S of N line	Derrick.
Texas Gulf Prod. Co.'s No. 11-B Kirby, Henry Griffith League, 411 ft. from S line, 473 ft. from W line of tract	Drlg. salt 2,682 ft.

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Central Ohio Leading in Central West Activity; Several Wells Completed in Kentucky Area

By GEORGE A. WHITNEY
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Aug. 7.—The Central West Field, comprising the old Lima Field of northwestern Ohio, Central Ohio, Indiana, Illinois and Kentucky, shows about the usual amount of new work starting. In the Lima Field no new completions were reported, the nearest completion being Ohio Fuel Gas Co.'s No. 1 on the Ira Schoenberger farm, Section 20, Crane Township, Wyandot County, which has an oil showing in the Trenton lime from 1,369 to 1,408 feet. Upper Sandusky Oil & Gas Co. is reported drilling below 350 feet in No. 3 on the N. & H. Saltsman farm, Section 28, same township. Ferdell and others are rigged up on the Mary Sampson farm, Section 20, same township and county. Keiner and others are drilling below 1,325 feet in No. 1 on the Gotlieb Seiler farm, Section 34, Crane Township. McPheron and others have a rig standing on the A. E. Myers farm, Section 3, same township.

Dewey Oil & Gas Co. is drilling below 1,200 feet in No. 2 on the Hattie Martin farm, Section 33, Clinton Township, Seneca County, in the Tiffin Field. Montgomery and others have not started drilling on their test on N. F. Hetrick farm, Section 2, Rice Township, Sandusky County.

L. Ennis Oil & Gas Co. is reported drilling around 2,515 feet on the E. H. Brown farm, Lots 20 and 30, Grand Prairie Township, Marion County.

Ackerman and others are shut down at 1,200 feet on the Barley Waggoner farm, Section 31, Sandusky Township, Sandusky County. There still remains much undeveloped territory in Sandusky County as well as in Ottawa and nearby counties.

C. A. and F. J. Peavy are reported drilling No. 8 on the C. A. Hoover farm, Section 24, Bath Township, Allen County, not far from Lima.

A. A. Lauber is reported drilling No. 1 on the J. H. Lange farm, Section 26, Butler Township, Mercer County.

CENTRAL OHIO

More activity is shown in the Central Ohio Field than any other division of the Central West, owing to the gas development along with the oil. In Ashland County, Lake Township, Stewart and others' No. 7 well on the David Horn farm, Section 4, may make a commercial producer.

In Lorain County, Dempsey and others drilled a dry hole on the H. E. Piper farm, in Lot 63, Pittsfield Township, from 2,077-82. Wittmer Oil & Gas Co. is drilling on the H. W. Ingersoll farm in Lot 86, Grafton Township. Minor and others are drilling No. 3 on the Mathias Myers farm, Lot 32, Ridge Township. Ohio Fuel Gas Co. is drilling four wells in the county.

In Wayne County Faulkner & Phelps are drilling No. 4 on the Mary E. Smyser farm, Section 26, Chester Township.

In Summitt County, East Ohio Gas Co. has a rig in for No. 1 on the Mrs. F. Snider farm, Section 30, Green Township, and has made a location for No. 1 on the John Paul farm, Section 31, same township.

In Coshocton County, Perry Township, Hulse-Kundtz, Inc., is drilling No. 2 on the Rolla McKee farm, Section 17.

In Licking County, Fallsburg Township, Wehrle Gas Co.'s No. 1 on the G. W. Kreager farm, Lot 37, produced an initial of 4 bbls. from 2,256-60 feet. McClay Brothers' No. 2 on the Fern Smith farm, in Lot No. 17, same township, produced 5 bbls. initial from 2,887 to 2,928 feet. Wehrle Gas Co. is drilling No. 2 on the Gaily Baker farm, Lot 1, Granville Township.

In Athens County, C. W. Nuzum's test on the Viola V. Tuttle farm, in Fractional Section 3, Berne Township, was dry at 972 feet, and John Bowman is rigged up but shut down in No. 4 on the Lorenzo Lovelle and others' farm, in Section 24, same township. Carpenter & Glaizer are shut down at 105 feet n No. 17 on the Nettie D. and C. C. Curtis farm, in Fractional Section 17, same township. Stewart & Ross' No. 1 on the Frank E. Halbirt farm, in fractional Section No. 1, Cannon Township, same county, shows some gas at a total depth of 1,660 feet, not yet completed. C. & M. Oil Co. is reported drilling below 1,135 feet on the G. M. Foster farm, Section 8, Troy Township.

Stark County

In Stark County, White and others' test on the Paul Belden farm, Section 18, Plain Township, is a gas well from 4,457-96 feet.

Brendel Producing Co. continues active in the development of the Central Ohio Field. This company is drilling No. 1 on the James H. McDowell farm, Section 16, Plain Township, Stark County, below 600 feet; No. 1 on the A. and L. Stephens farm, Section 9, below 1,500 feet; No. 1 on the Valentine Ney farm, Section 10, below 550 feet. Same company is rigging up on the Lillian Shoemaker farm, Section 5, same township, and setting up a rig for No. 1 on the Lawrence and Ethel Fritz farm, Section 10, same township. Same company is nearing completion of a test on the David and Nora Frederick farm, Section 10, Marlboro Township, same county, also drilling on the Frederick D. Schlebach farm, Section 25, Lake Township, also in Stark County.

Cunningham Natural Gas Co. is drilling below 2,700 feet in No. 2 on the John Marquardt farm, Section 8, Plain Township, Stark County. Stoltz and others are drilling below 2,000 feet on the Lynhurst Addition, Section 17, same township. Boettler and others are having a fishing job at 750 feet in No. 1 on the Peter Henry farm, Section 19, Plain Township. Hoover Development Co. is drilling below 2,900 feet in No. 1 on the Hoover company property, Section 20, and is drilling below 4,100 feet in No. 2 on the Hoover property, Section 18. White and others are drilling below 1,400 feet in No. 1 on the Forest Hill Cemetery, Section 20, Plain Township, and same parties' No. 1 on the Jacob Isler farm, Section 25, Perry Township, same county, is drilling below 2,900 feet. East Ohio Gas Co. is drilling below 4,000 feet in No. 1 on the J. W. and G. Shook farm, Section 7, Jackson Township, Stark County. Same company is drilling below 4,200 feet in No. 1 on the T. and H. McDowell farm, Section 16, Plain Township, same county. Same company's No. 1 Stewart Bixler farm, Section 9, same township, is drilling below 2,750 feet.

McClay Brothers' test on the Louis V. Miller farm, Section 19, Freedom Township, Portage County, struck the Newburg formation at 3,919-21 feet, with a light gas showing and then drilled into the Clinton lime from 4,351 to 4,460 feet, where a very light oil showing was found and the well will be given a test. In Charlestown Township, also in Portage County, Johnson and others are drilling below 3,050 feet on the Gail King farm, in Lot 39, and in Newton Township, Trumbull County, Johnson and others are drilling below 3,100 feet.

In Coshocton County, Preston Oil Co. is drilling below 2,850 feet in No. 1-1,522 on the Cary D. Harris farm, Section 17, Perry Township. Wiser Oil Co. is drilling below 2,865 feet on the Patterson & Crawford farm in Section 17, same township. Ohio Oil Co. is drilling below 1,500 feet in No. 5 on the Rhode heirs' farm, Section 8, Clark Township, same county.

In Guernsey County, Haines Brothers Oil Co.'s No. 4 on the J. V. Tipton farm, Section 23, Wills Township, at a depth of 414 feet, produced 5 bbls. of oil in eight days and has been plugged and goes as a dry hole.

In Tuscarawas County, Frey and others are drilling below 4,500 feet on the H. B. Gobert farm, Section 7, Fairfield Township. Lyons & Piefer are drilling below 4,500 feet in No. 5 on the J. H. Weaver farm, Section 5, same township.

In Belmont County, Frank Stranges is drilling below 1,150 feet on the T. A. and W. Walker farm, Section 20, Union Township. Robert Morgan and others ran into a fishing job at 240 feet in No. 1 on the William M. Boyd farm, Section 15, Union Township, and are drilling below 250 feet in No. 7 on the William Shepherd farm, Section 21, Union Township.

INDIANA-ILLINOIS

There were no completions in Indiana or Illinois for the week.

KENTUCKY

There is a vast change in development in the Kentucky Field, and more wells were completed for the week than in any like period for more than two months. The new wells are not large producers of oil, there being four oil wells, with an initial of 59 bbls., one gas well and five dry holes.

In Ohio County the Bank of Whitesville drilled in No. 10 on the Earnest Bickett farm, 410 feet from the south line and 400 feet from the west line of the farm, in the Herbert Pool, with an initial of 25 bbls. Same party's No. 11 well, 200 feet from the south and west line of the Earnest Beckett farm, was dry.

In Daviess County, Cameron & Thompson's No. 1 on the M. E. Cravens farm, in the Owensboro Field, is reported dry.

In Hancock County the Sands Petroleum Corp.'s No. 2 well, 200 feet from the south line and 410 feet from the west line of the Fred Sheown farm, in the Crow Hill area, had an initial of 5 bbls. Coleman & Wright's test in the southeast corner of the Alfred Wright farm, in the Roseville area of the county, was a dry hole.

In McLean County, T. Y. Gregg and others' test on the Albert Burshear farm, in the Calhoun Pool, produced an initial of 10 bbls. Same company's test on the L. E. Morris 20 acres, same pool, was dry as was J. C. Miller and others' No. 1 on the John Sparks farm, same area.

In Muhlenberg County, Mayer Oil Co.'s test on the R. O. Kennedy 45 acres, in the Greenville Field, produced an initial of 19 bbls. along with a heavy gas pressure. Ellis & Young are drilling below 1,100 feet on the A. F. Walker farm, same field, and the H. K. Oil Co. is drilling at 505 feet in No. 1 on the Jack Ebling farm, same pool.

Imperial Oil & Gas Products Co.'s No. 6 on the S. A. Freeman farm, in the Niagara Pool, of Henderson County, is reported a fair oil well, around 15 bbls.

Largest Well Completed in Michigan Is Estimated Around 10,000 Barrels

By GEORGE A. WHITNEY

MUSKEGON, Mich., Aug. 5.—Mammoth Petroleum Co.'s No. 1 Verette, NW SE SE, Section 23-16n-4w, Vernon Township, Isabella County, brought in Thursday night, yesterday flowed 220 bbls. in 16 minutes, by far the largest producer in Michigan oil history, with estimated daily flow of 10,000 to 12,000 bbls., one-fourth shut in.

No. 1 Verette blew in with tools in hole at 3,714 feet in the Dundee pay sand with gas flow estimated 2,000,000 feet daily. The flow increased Friday after the first test of 240 bbls. in 45 minutes Thursday night. Isaiah Leebove, close personal advisor of Governor Comstock, is president of the company. State police were called to handle the crowd. Two pipe lines are to be laid immediately.

The former record well, Pure Oil Co.'s No. 1 State-Porter, NW NW SE, Section 15-13n-1w, Porter Township, Midland County, was estimated initial 5,000 bbls. and averaged 2,300 bbls. for eight days. It was partly shut in six months ago.

No. 1 Verette is one of a dozen wells drilling in a new play for Vernon Township, former Minor oil and gas pool in Mount Pleasant area.

Fred W. Turner's No. 1 Mahar, NE SE NE, Section 26, Vernon Township, gauged 3,000,000 feet of dry gas in the Michigan sand at 1,325 feet, half mile northeast extension of present gas wells, is to be carried to the Dundee. Six new locations have been surveyed.

W. Hunter Atha's No. 1 Talker, NE NE SE, Section 7-14n-1w, Lee Township, Midland County, was brought in at 3,540 feet as a 100-bbl. producer, opening a new Mount Pleasant area pool.

Ogemaw County

Much activity in leasing far in advance of the present Central Michigan Field has followed the find by Alvin Weber in his test on the Stella Wilcox farm, NE SW NW Section 34, West Branch Township, Ogemaw County.

A number of tests have been drilled in Ogemaw County but the Wilcox well is the first to be found and there is a belief that an oil pool of importance is located in that particular area. Reports are that other tests will be made along a northwest and southeast trend from the Weber well where a long structure is believed to exist. Former tests had brought important shows of both oil and

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Michigan Fields

(Continued from Preceding Page)

gas and, according to drilling records, shows had been made in the Berea and Traverse formations, as well as in the Dundee and Sylvania formations on various tests, but appeared to be off structure and were not of commercial import. The No. 1 Wilcox is believed to have definitely located the structure high in the district and development probably will follow along what is believed its general trend.

The Pure Oil Co., according to reports, holds leases on several thousand acres, and has done the major test work in Ogemaw County. The Wilcox lease was formerly held by the Pure Oil Co., but was farmed out to the Weber interests for development. In the event a Traverse pool of consequence is defined it probably will bring a major drilling play. Drilling costs are greatly under the Central Michigan Field average, being 1,500 to 2,000 feet less per hole to drill and case.

Other Completions

Pure Oil Co.'s No. 4 well, 330 feet from the south line and 2,310 feet from the west line of the Mina Naramore farm, SE SE SW Section 15, Porter Township, Midland County, is credited with an initial of 300 bbls.

Columbia Oil & Gas Co.'s test in the northeast corner of the William Travers farm, NE NE SE Section 32, Greendale Township, Midland County, has been abandoned as a dry hole at 3,451 feet.

Strange & Fortney's test in the northwest corner of the Campbell farm, NW NW SW Section 17, Porter Township, brought in with an initial of 350 bbls., has been treated with acid and is reported doing around 1,500 bbls. The depth was 3,407 feet, the drill going 37 feet in the Dundee formation.

Field Pickups

Fred W. Turner and others are drilling No. 2 well, 990 feet from the north and east lines of the C. L. Baxter farm, SW NE NE Section 22, Porter Township, Midland County. Davies Oil Co. is drilling No. 1 well, 330 feet from the north and east lines of the H. Nitzke farm, NE NE NW Section 21, same township. J. Mark Harvey, trustee, is drilling No. 1 well, 350 feet from the north line and 1,660 feet from the east line of the Hattie M. Hodge farm, NE NE SW Section 18, same township. Pure Oil Co. is drilling No. 5 well, 990 feet from the south line and 2,310 feet from the west line of the Mina Naramore farm, SW Section 15, same township; also No. 2 well, 1,650 feet from the south line and 2,310 feet from the east line of the State-Porter farm, N half SE Section 15, same township. Edward Stewart is drilling No. 4 well, 990 feet from the south and east lines of the J. B. Richmond farm, NW SE NW Section 22, same township. Pure Oil Co. is drilling No. 1 well, 578 feet from the north line and 709 feet from the quarter section line of Section 17, same township.

Theodore Oil Co.'s test on the Dr. J. W. Campbell farm, SW NW NE Section 17, is almost ready to drill in. It is in Porter Township, Midland County.

Charles C. Flaida and others' test on the Pringle heirs farm, NE SE NW Section 14, Greendale Township, Midland County, is drilling at 3,300 feet.

Two wells are due for completion in the Isabella County area in Vernon Township: Mammoth Petroleum Co.'s test in the northwest corner of the Verrethe farm, SW SE SE Section 23, and Mellon-Pollock Co.'s in Section 23, same township, on the John Stough farm.

The Producers Pipe Line Co. is reported starting construction work on a 20,000-bbl. storage tank in Porter Township, Midland County, and the laying of gathering lines in preparation for transportation of oil from the new field on a major scale. Producers will transport oil by motor truck tankers to their markets.

Another well in the Ctntral Michigan Field is nearing the Dundee formation, Strange & Flynn's No. 1, on the W. E. Currie farm, SE SW SE, Section 5, Vernon Township, Isabella County, which is drilling below 3,650 feet.

McClanahan Oil Co., after an extended fishing job at close around 1,200 feet, recovered the tools in a test on the S. M. Densmore farm, Section 4, Porter Township, Midland County, and is now drilling.

Drilling Permits

Permits for drilling were issued to Earl Severs and Walter Severs for No. 1 well, 357 feet from the south line and 1,258 feet from the west line of the Flora Redway farm, SE SW SW Section 9, Ida Township, Monroe County; to J. G. Brown, trustee, for No. 1 well, 340 feet from the north line and 1,660 feet from the west line of the Fred Priehs and wife Martha (No. 1 Fargo), NW NE NW Section 14, Greenwood Township, St. Clair County; to the Eureka Gas & Oil Co., for No. 1 well, 350 feet from the south line and 320 feet from the east line of the Joseph Chesnavitch farm, E half NW Section 36, Hart Township, Oceana County; to Fred W. Craft for No. 1 well, 990 feet from the south and east corners of the John Richter farm, NW SE SE Section 19, Fort Gratiot Township, St. Clair County; to the Stork Oil Co. for No. 3 well, 990 feet from the south and east lines of the James C. Hill farm, NW SE SE Section 22, Porter Township, Midland County; to the Pure Oil Co. for No. 1 well, 2,310 feet from the south line and 1,650 feet from the east line of the F. W. Howard farm, W half SE Section 17, Porter Township, Midland County; for No. 1 well, 330 feet from the north line and 990 feet from the east line of the George H. Whitney farm, W half NE SE Section 17, Porter Township, Midland County; for No. 1 well, 250 feet from the south line and 255 feet from the west line of the Charles Hill farm, SW NW Section 17, Porter Township, Midland County; for No. 1 well, 578 feet from the north line and 709 feet from the west line of the John H. Miller farm, SW SW Section 17, Porter Township, Midland County; to James E. Flanigan for No. 1 well, 700 feet from the north line and 300 feet from the east line of the D. Powers farm, NE NE Section 1, Shelby Township, Oceana County; to the Sun Oil Co. for No. 2 well, 990 feet from the south line and 330 feet from the east line of the J. L. Miller estate, NE SE SW Section 16, Porter Township, and for No. 3 well, 330 feet from the south line and 990 feet from the east line of the J. L. Miller estate, SW SE SW Section 16, same township.

Lost Run Pool Well Continues to Flow Causing Geologists to Look for Possible Extension

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Aug. 7.—None of the lower eastern fields returned the allowable normal production for the month of July, thus causing a drain on already depleted stocks. The refinery demand continues in excess of the average production for the past month, but the last few days of the month found runs increasing in the fields and approximately the 100 per cent as of November, 1931, though some of this production was due to flush production from recent wells.

In Lost Run Pool, Clay district, Ritchie County, West Virginia, the second test of Frank Finley and others on the Boehm and Neeley (Strickler heirs) farm, continues to flow, and after maintaining an average of over 450 bbls. a day since the Injun sand was tapped, is now producing about 340 bbls. a day, natural, at the beginning of the fourth week. Geologists have become interested in this section and are figuring out possible extensions of the Injun sand streak, and with divergent opinions. It is agreed that the second test on the Boehm and Neeley lease is the largest expected.

Now drilling in this pool, Hinton Farm Oil Co. has reached 700 feet in No. 3 on the L. E. Robinson farm. Richards Farm Oil Co. spudded in a second test on the Frank R. Ball farm and is drilling at 200 feet. Frank Finley and others have made a location for No. 3 on the Boehm and Neeley lease. Robert E. Elder has started drilling a test on the S. E. Satterfield farm and is down 300 feet.

Completions proved fair in the eastern fields for the week. Nine wells were completed and two dry holes abandoned. Five of the wells were producers with an initial production of 210 bbls., and there were four gas wells. The production was mostly in Southeast Ohio.

SOUTHEAST OHIO

In Southeast Ohio, four producers were completed and there were also two dry holes. The best producer was in Coshocton County, where Wiser Oil Co. completed a test on the A. E. Patterson farm in Section 17, Perry Township. It was drilled in the Clinton sand at a depth of 3,076 feet and produced 28 bbls. the first day natural. After shot this was increased to 75 bbls. a day.

In Clarke Township, Coshocton County, a test of interest was completed by Mehowa Oil & Gas Co. on the Sol Haun farm, Lots 7 and 8. It was drilled in the Clinton sand to a depth of 3,598 feet and is producing about 35 bbls. a day. It was not drilled to the lower pay on account of a lost bit in the hole.

In Hocking County another fair producer was reported. Ohio Fuel Gas Co. completed its No. 5721 on the Sunday Creek Coal Co. tract in Ward Township. The well is in the center of Section 11. It is a Clinton sand well at a depth of 3,512 feet and produced 10 bbls. the first day, natural, which was increased to 89 bbls. the first day after shot.

One mile west of Morganville in Morgan County, George B. Hazlett drilled a test on the Effie Massy farm, Section 34, Deerfield Township. It found the Cow Run dry and was abandoned at 126 feet.

In Noble County, Harper Brothers drilled a test on the Charles E. Neptune three-acre tract in the southeast quarter of Section 31, Enoch Township. The Buel Run sand was dry at 150 feet with no showing of oil or gas but considerable water.

WEST VIRGINIA

Four gas wells and one small producer was the total of the new work in West Virginia during the week. The producer was the test of the Kelchap Co. and Manuel Kelley on the R. G. W. Campbell farm in Jefferson district, Pleasants County. It was completed in the Injun sand and will make a small pumper.

In Calhoun County there were three gas wells completed. In Center district, Everett Starcher and others, drilling as the Rocksdale Oil & Gas Co., completed a test on the C. C. Starcher farm in the Injun sand at 1,787 feet. It gauged at about 425,000 feet of gas a day, initial. In the same district, Starcher and Richards completed a test on the Chenowith and Edman lease in the same formation but at a depth of about 2,100 feet. It is rated at about 200,000 feet a day.

In Sherman district, Calhoun County, Mollahan and Poling completed their test on the F. M. White farm in the Injun sand at a depth of 2,136 feet. It is a fair gas well showing for about 475,000 feet a day.

In Wetzel County the Harrison-Ritchie Oil & Gas Co. completed drilling its No. 2 on the B. M. Wade farm in Green district deeper from the Injun sand. It was completed in the Gordon sand and is good for 250,000 feet a day with a light showing of oil.

In Monongalia County, the Kane Gas & Plumbing Co. drilled a test on the Milton Coombs farm in Grant district to 1,980 feet and it was a dry hole.

Drilling in West Virginia

In Boone County Pure Oil Co. is building a rig for No. 62 on the Federal Coal Co. tract in Sherman district. Its No. 60 on the same lease is drilling at 1,086 feet. Their test on the A. M. Prichard farm is down 1,436 feet.

In Kanawha County, Pure Oil Co. has reached 2,814 feet on the Cheylan Coal Land Co. tract in Cabin Creek district. In the same district, and on the A. H. Huntington lease, Godfrey L. Cabot has reached 1,550 feet in No. 41. In Elk district Marshall and Price are down 900 feet in No. 9 on the Goshorn heirs lease of 1,118 acres on Laurel Fork of Blue Creek.

In Clay County the test of Godfrey L. Cabot on the Bell Creek Land Co. in Pleasant district, has reached 2,465 feet. This operator has a road built to a location for No. 9 on the Hill-Long lease in the same district and has a rig standing on the W. E. Smith farm in Jefferson district, Nichols County.

In Calhoun County, Grant Fowler has started drilling on the Orval Postlethwait farm in Washington district. In Lee district, F. F. McIntosh has started drilling No. 3 on the S. A. Hays farm. In Sherman district H. N. Scott is about on top of the Injun sand on the Beall and Wilson lease, the tools being below 1,900 feet. In Sheridan district, Ira Haught and others are down 1,780 feet in No. 3 on the Alva Elder farm. On the Lee Roy Jones farm, Cain and Rothwell have reached 800 feet in a test.

In Gilmer County, A. E. Ellis and others have part of the materials on the ground for a second test on the Ware and Webster lease in DeKalb district. Clem Morris and others are now rigged up on the Cora B. Gainer farm, same district.

In Roane County Big Four Drilling Co. is down cementing its test on the W. S. Fouty and others' lease in Curtis district and at 1,150 feet. Charles Despard and others reached 1,720 feet on the Charles Starcher farm in Smithfield district and shut down.

In Ritchie County J. F. Deem and others have a rig standing for a second test on the Mansfield Haught farm on Indian Creek in Murphy district. In the same district Clem S. Morris is rigging up on the Hiram Williams heirs farm. In this district King Knob Oil Co. is down 1,704 feet on the H. C. Allen farm. Deem and Overton are down 820 feet on the R. A. Overton farm. Bode and Stoffle are down 1,480 feet in the second test on the John Coyle farm. Lewis and Litten Gas Co. is rigged up ready to start on the Conley heirs farm.

In Cabell County the depths of the various wells drilling in Guyandotte district are as follows: Swanson and Martin on the J. T. Tubert farm, 2,520 feet; Graham Gas Co. on the S. P. Hager farm, 2,524 feet; Ross Campbell, on the Julliette Enslow farm, 1,600 feet; Petry and Borders on the Shelby Johnson farm, 1,960 feet. On the United Fuel Gas Co. lot, Fairfax Gas Co. is rigged up. In McComas district, West Virginia Gas Corp. is down 350 feet on the H. L. Day farm, and Oraann Gas Co. is rigged up on the George H. Midkiff farm.

In Jefferson district, Lincoln County, Pridemore and Adkins are down 1,325

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Unification of Middle Dome, Kettleman Hills, Is Ratified by the Forming of New Corporation

By L. P. STOCKMAN
Staff Correspondent, California Fields

LOS ANGELES, Calif., Aug. 5.—Ratification and approval of a plan to unify drilling and production activities in the Kettleman Middle Dome Field of Kings County was of outstanding importance in California during the past week as the signing of this agreement climaxed a long and arduous attempt to work out a plan that would be equitable to all concerned and at the same time conserve this natural resource. Articles of incorporation of the Middle Dome Corp. were filed at Sacramento several days ago and election of Floyd S. Bryant of the Standard Oil Co. as president, R. S. Lytle of Petroleum Securities as vice president and Eugene H. Blanche, secretary-treasurer, followed within a short time. In addition to the officers elected to serve for a period of one year, the corporation will be governed by a board of directors consisting of Floyd S. Bryant, J. E. Degnan, Warner Clark, R. S. Lytle, Eugene H. Blanche, L. W. Andrews, Jr., and C. W. Lord. The plan, which was formulated with the approval of G. W. Holland, representing the Department of the Interior, will be submitted to Secretary Ickes within the next few weeks for his sanction.

The projected unification of the Middle Dome differs somewhat from that in effect in the North Dome as participating acreage in the former field can be expanded or contracted in order to reflect future development. At the present time 1,170 acres are regarded as proved up, and, until drilling operations change the picture, participation in the Middle Dome Corp. will be limited to this red line acreage. Of this 1,170 acres the Standard holds 580 acres, the Bolsa Chica 300 acres, Petroleum Securities 150 acres and the Shell 140 acres. From a percentage standpoint, the Standard has a 49.57 per cent interest, Bolsa Chica 25.64 per cent, Petroleum Securities 12.82 per cent and the Shell 11.97 per cent. It is the present intention to permit the Petroleum Securities to drill another well in the Middle Dome if the present plan meets with approval of the Secretary of the Interior, and it is quite likely, therefore, that the Middle Dome Corp. will become an operating entity in the near future.

The Kettleman Middle Dome Field is one of three topographic highs in the Kettleman Hills which extend southeastward from Coalinga for a distance of approximately 30 miles. The North and Middle Domes of Kettleman Hills have been found productive but the South Dome is still a blank, although subsequent drilling may change its status. In the light of developments undertaken up to the present time and because of the lack of closure in the south end production possibilities of the South Dome appear rather unfavorable.

Potential Increased

California's potential daily production was stepped up 18,200 bbls. on August 1, due to the completion of several large wells during July. The allowable daily quota was also increased, with the result that California producers now have an allowable daily production of 459,600 bbls. This new quota, which is 7,100 bbls. per day in excess of the previous allotment, is due to an increase of 1,900 bbls. in the daily quota of San Joaquin Valley fields, 200 bbls. per day in the quota of Coastal fields and an increase of 5,000 bbls. per day in the allowable of Los Angeles Basin Fields. The allowable of the Midway-Sunset Field was increased 2,000 bbls. per day during August, while Huntington Beach allowable was raised 2,500 bbls. per day. Richfield and Torrance were given new allowables of 7,100 bbls. per day and 7,000 bbls. per day respectively. The revised quota of these two fields is 800 bbls. per day in excess of the previous maximum. The quotas for Montebello and Playa Del Rey were increased 300 bbls. per day. The increase of 18,200 bbls. in the state's potential daily production is attributed primarily to an increase of 10,000 bbls. per day for the Kettleman North Dome Field, 9,325 bbls. per day for Huntington Beach and 4,200 bbls. per day at Elwood. The potential daily production of several fields was reduced August 1, although in most instances the cuts were rather negligible. However, the potential of Santa Fe Springs was reduced 1,275 bbls. per day, Long Beach 510 bbls. per day, Ventura Avenue 825 bbls. per day, Fruitvale 365 bbls. per day and Mountain View 1,750 bbls. per day. The increase of 10,000 bbls. in the potential daily production of the Kettleman North Dome Field reflects the completion during July of Standard's No. 25-35-J, Supervior Oil Co.'s No. 6 Huffman, Standard's No. 81-27-Q, Kenda's No. 32-32-J and Standard's No. 8-21-J.

New Drilling Permits

R. D. Bush, state oil and gas supervisor, had another busy time this week due to another deluge of applications for permission to drill new wells. During the past seven-day period operators filed 84 notices to drill new wells, bringing the total permits filed to 590 for the current year to date, compared with 186 at the same time last year. This abnormal increase does not indicate that operators have resumed unrestricted drilling as many of the permits filed are paper locations ostensibly filed to secure permission to drill before the Federal deadline. Of the 84 notices to drill filed this week, 25 were for wells in the Huntington Beach Field, 29 in the Dominguez Field, one each in the Long Beach, Richfield, Seal Beach, Coyote Hills, Simi and Rosecrans Fields, two in the Elwood Field, 12 in the fields of Kern County, 4 in the Kettleman North Dome Field, one each in Tulare and Fresno Counties and 2 each in Los Angeles and Riverside Counties.

The Union Oil Co. headed the list of permits issued during the current week by indicating its intention of starting 28 new wells in the Dominguez Field of Los Angeles Basin. These new wells, 11 to be drilled on the Callender lease, one on the Carson lease and 16 on the Hellman lease, will not be started simultaneously as the company has no desire of abnormally stimulating production in the Dominguez Field by additional drilling. The Standard Oil Co. indicated its intention of drilling seven new wells in the near future, three of which will be started in the Huntington Beach Field and four in the Kettleman North Dome Field. The Superior Oil Co. filed notices of intention to drill eight new wells in the Huntington Beach Field on the Berry, Chudnow, Gilmore, Groves and fee property. Deepening and redrilling jobs have shown a substantial increase during the current year to date, due in a large extent to deepening operations in the Richfield and Huntington Beach Fields. During the past week the Shell indicated its intention of reconditioning five wells in the Santa Fe Springs Field, two of which will be located on the G.H.&N. lease and three on the Slusher property. The Standard is starting to recondition No. 8 Hepler and Nos. 10 and 11 on the Walker lease in this field, while the Union is starting corrective work on No. 9 Bell. Texas Co. filed notice of its intention to recondition No. 8 Weaver. In the Montebello Field, St. Helens Petroleum contemplates reconditioning No. 13 Monterey and No. 1 McDonald.

Huntington Beach

Several good wells were finished in the Seventeenth Street town lot area of the Huntington Beach Field during the current week and a check of development work under way indicates the probable completion of several additional potential producers within the next 10 days. The substantial production registered by recent completions in the town lot area has stimulated drilling operations to such an extent that considerable new work is still getting under way. Wilshire Oil Co., which finished a 4,500-bbl. well in the town lot area a week or two ago, has just spudded in No. 19 and is rushing ahead preparations to begin making hole in No. 18 some time within a few days. Other new wells spudded during the past week or scheduled to begin making hole in the near future include the American Petroleum Co.'s No. 1, Prosperity Oil Co.'s No. 1, Richards & Rowan's No. 2 Severns, Standard Oil Co.'s No. 64-B and Nos. 17 and 18 and the Pacific Electric lease, Tide Petroleum Corp.'s No. 1, Petroleum Co.'s No. 1 fee and Termo Corp.'s Nos. 2, 4 and 5 on fee property.

Completions Are Satisfactory

Completions in the Seventeenth Street town lot area during the week were rather satisfactory from a production standpoint. Simaroo Oil Co. headed the completion list by finishing No. 1 Morris flowing 2,265 bbls. of 23.1 gravity oil and approximately 2,000,000 feet of gas per day from 4,460 feet. This new well was drilled by McVickers & Rood, the incorporators of the Camroo Oil Co., Macroo Oil Co., Simaroo Oil Co. and Vicaroo Oil Co. Upon the completion of Simaroo Oil Co.'s No. 1 Morris, McVickers & Rood increased their current daily production in the town lot area to 5,865 bbls., as No. 1 Smith of the Macroo is flowing 2,775 bbls. and No. 1 Huntington of Vicaroo 825 bbls. per day. In addition to these three flowing wells, McVickers & Rood have one other drilling project under way. Hammil Oil Co. completed No. 2 Lewis Community early in the week, flowing 752 bbls. of 24.6 gravity oil and 410,000 feet of gas per day. No. 2 Lewis Community was bottomed at 4,463 feet, finished with a 6⅝-inch liner including 678 feet of perforated, and brought in flowing through a three-quarter inch bean. Termo Corp.'s No. 1 McIntyre was brought in on the beam pumping 278 bbls. of 23.1 gravity oil after being redrilled and deepened to 4,370 feet. Wilshire Oil Co.'s No. 15 Huntington, a recent completion, has been holding up exceptionally well during the past 10 days as production has been averaging approximately 4,160 bbls. of exceptionally clean 26.1 gravity oil per day. Wells expected to be completed within the next week or 10 days include Oscar Howard's No. 1 Travis and Petrol Corp.'s No. 1 Lambert, both of which are drilling in the pay.

Richfield

Drilling operations in the Richfield district of Los Angeles Basin showed a slight increase during the past week and a further gain in development work is anticipated during the next 30 days. The expectation of increased development in the Richfield district is predicated on the fact that drilling operations are scheduled to get under way on Doyle Petroleum Co.'s No. 1, Morley & Jefferson's No. 2, St. Helens Petroleum Co.'s No. 1, in addition to redrilling operations on several suspended producers or old abandoned holes. Standel Oil Co. has started preparations to redrill and deepen No. 1 McCracken, an old abandoned hole of

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	July 22		July 15			
Intercoastal-domestic—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	78,085	.....
Fuel oil	.....	.....	.....	.....	805,661	.....
Diesel and gas oil	.....	.....	.....	.....	1,085,064	219,058
Gasoline	262,026	37,432	.....	.....	5,329,666	4,963,647
Kerosene	.....	.....	.....	.....	502,970	154,372
Foreign exports—						
Crude oil	138,177	19,740	199,627	28,518	4,121,605	4,947,269
Fuel oil	195,159	27,880	106,676	15,239	4,383,394	5,088,822
Diesel and gas oil	154,319	22,046	25,170	3,167	2,112,263	1,435,155
Gasoline	.....	.....	.....	.....	3,443,474	5,245,345
Kerosene	.....	.....	.....	.....	1,020,864	1,439,301
Naphtha distillates	.....	.....	.....	.....	.....	120,075
Coastwise-domestic—						
Crude oil	64,310	9,187	79,095	11,299	4,600,055	8,231,668
Fuel oil	240,984	34,426	42,192	6,027	5,757,866	7,095,499
Diesel and gas oil	10,576	1,511	5,652	807	772,590	726,957
Gasoline	333,215	47,602	315,691	45,099	7,084,135	8,680,064
Kerosene	.....	.....	6,633	948	115,248	98,549
Naphtha distillates	.....	.....	.....	.....	27,651	.....

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
Diesel and gas oil	.....	.....	.....	.....	280,531	302,136
Gasoline	.....	.....	.....	.....	571,072	504,956
Kerosene	.....	.....	.....	.....	482,430	.....
Lubricants	.....	.....	.....	.....	24,366	16,824
Foreign exports—						
Crude oil	70,265	10,039	77,150	11,021	1,147,298	707,651
Fuel oil	.....	.....	.....	.....	361,366	532,109
Diesel and gas oil	.....	.....	41,944	5,992	626,662	425,682
Gasoline	123,153	17,593	165,833	23,690	2,600,540	2,089,131
Kerosene	3,751	250	9,710	1,387	563,480	731,620
Lubricants	.....	.....	2,475	354	35,902	24,934
Coastwise-domestic—						
Fuel oil	.....	.....	174,270	24,896	1,916,524	1,730,732
Diesel and gas oil	.....	.....	.....	.....	166,162	228,094
Gasoline	105,455	15,067	94,897	13,557	2,114,585	1,964,224
Kerosene	.....	.....	.....	.....	73,619	72,067
Lubricants	.....	.....	.....	.....	2,751	.....

General Petroleum at 3,287 feet, and the bit should be started down to the Breen zone within the next several days. Standel has also acquired the Walker lease of General Petroleum, which was quitclaimed a year or so ago, and preparations are already under way to re-enter No. 1 Walker and resume drilling operations at 4,400 feet. Union is constructing new rigs over No. 3 A.&P. and No. 5 T.&G., preparatory to deepening these abandoned holes to the Breen sand. J. E. Nugent is also constructing a new rig over an old abandoned hole and should have rotary equipment installed some time within the next several days. The Breen zone in the Richfield district is not expected to prove unusually prolific, although flowing wells are expected to be brought in during the next 60 days. The Breen horizon is between the upper, or Chapman, zone and the lower, or Kraemer, zone. In some unexplainable manner, this intermediate zone was passed up during early development of the field. It is the opinion that the oil zone was mudded off as its presence is shown on the logs of several wells, although early records do not indicate whether it was tested out. Geologists are of the opinion the Breen zone will be rather lenticular, and for this reason not conformable with the Chapman zone.

Kettleman Hills

The Kettleman North Dome Association has listed No. 32-32-J for completion in the Kettleman North Dome Field after experiencing a little difficulty. This new well, which offsets Union Oil Co.'s Amerada King lease, was given a preliminary production test late last week but failed to come up to expectations, notwithstanding swabbing operations of several days' duration. It flowed by heads for several days but Kenda deemed it advisable to complete it on a compressor. Latest reports indicate the well is producing 625 bbls. of 32.9 gravity oil per day from 8,929 feet, although this may not represent the well's maximum production after it has cleaned itself out. Kenda has resumed drilling operations in No. 8-8-Q at 7,166 feet and it is the present intention to finish this well as a commercial producer. The Kettleman North Dome Association's No. 8-8-Q is Shell Oil Co.'s No. 1 Armstrong, which was carried down to 7,166 feet and subsequently turned over to the Association when that body assumed control of all government acreage in the North Dome. In addition to resuming work on No. 8-8-Q, Kenda is rigging up rotary equipment preparatory to starting drilling operations in No. 85-30-J and is building rig for a new well to be drilled in Section 28-21-17. Standard Oil Co. has started rig construction for Nos. 38-19-J and No. 45-1-P and is rigging up rotary equipment preparatory to an early spud in No. 36-35-J. Union Oil Co. is expected to recomplete No. 2 Amerada King some time within 10 days and will immediately resume drilling operations on No. 4. North Kettleman Oil & Gas Co. has not yet resumed work in No. 1 Lillis-Welsh, the world's deepest hole, but Ed McAdams, president of the company, expects to resume drilling operations shortly. This well has been standing suspended for the past several weeks following the loss of approximately 1,000 feet of drill pipe.

Mount Poso

Himovitz Oil Co. chalked up a nice record in the Mount Poso Field of Kern County by completing No. 1 in Section 21-27-28 pumping 502 bbls. of clean 16.4 gravity oil per day. This new well, bottomed at 2,026 feet, was spudded July 4, 1933, and put on the beam less than 30 days later. Shell Oil Co. is rigging up rotary equipment in No. 6 Vedder, a new well to be drilled in Section 9-27-28, and drilling operations are expected to get under way within a few days. This well is a direct offset of Pongrats Oil Co.'s No. 3, a recent completion. L. A. Bergere has filed notice of intention to drill five new wells in the Mount Poso Field of Kern County, but up to the present no tangible evidence is visible. Bern Oil Co. expects to start drilling operations in No. 2 Glide during the next few days.

In the Round Mountain Field of Kern County, Howells Brothers have reached a depth of 708 feet in No. 1-A, which is being drilled in Section 32-28-29. Kern River Oilfields, Ltd., has taken out a permit to drill No. 4 Kernco in this district but will probably not start drilling operations in the immediate future as the company is expected to center its development work in the Richfield and Montebello fields for the present. J. B. Mitchell has taken out two permits for wells to be drilled in the Round Mountain Field in Section 6-28-29. North of McKittrick Field, General Petroleum is rotating in No. 1 Lovitt, a wildcat in Section 10-30-21, at 2,400 feet, but has not yet passed through the brown shale. Continental Oil Co. has suspended drilling operations on No. 4 Result, a new well in the North Belridge Field of Kern County, due to salt water encountered at 5,710 feet. The salt water indicates that the Temblor is unproductive at this point and the company did not even consider it necessary to make a production test. This well will ultimately be redrilled and deepened to the underlying Tejon, in which formation the company should finish a substantial producer. In accordance with a conservation policy, operators in the North Belridge Field of Kern County have agreed to refrain from deep zone exploitation until conditions improve or some definite plan is formulated whereby the production of this field can be held in restraint. In the Devil's Den area of Kern County, Lincoln Petroleum is drilling in a wildcat which may prove of importance.

Mountain View

There was no great change in the status of development work in the Mountain View Field of Kern County, although all of the five wells under way made additional footage. Quite a number of locations have been staked in this field but operators appear to be marking time pending developments. Within another three weeks Shell Oil Co.'s No. 2 Porter Day and Bankline Oil Co.'s No. 1 Symons should be deep enough to pick up the horizon found productive by Dana Hogan several months ago. No. 2 Porter Day of Shell, due to its close proximity to Dana Hogan's No. 1 Whorton, is almost certain to result in production, but the outcome of work on Bankline's No. 1 Symons cannot be predicted with any degree of accuracy. It is the opinion that completion of either one will greatly stimulate additional development.

Buena Vista Lake area of Kern County southeast of the Elk Hills Field and due east of the Midway-Sunset Field, has become the scene of an intensive wildcat leasing campaign during recent weeks. The Ohio some time ago acquired leases on 3,710 acres and this activity resulted in other operators obtaining protective acreage. Early this week Fullerton Oil Co. consummated a lease covering 640 acres about midway between Ohio's Buena Vista acreage and the Elk Hills Field. Ohio is reported to have purchased approximately 1,500 acres in fee. This leasing campaign in the Buena Vista Lake region of Kern County is predicated on what appears to be a favorable reaction to geophysical exploration. Operators have been leasing acreage in the area southeast of the Elk Hills Field and on a line parallel with the Midway-Sunset Field.

San Miguelito

No. 2 Grubb of Continental Oil Co. and Honolulu Consolidated's No. 1 Valenzuela in the San Miguelito Field of Ventura County have taken on an extremely doubtful aspect during the past few weeks due to the failure to encounter an oil sand of sufficient thickness to justify a production test. Continental's No. 2 Grubb has logged numerous thin streaks of oil sand during the past 1,000 feet but has not yet picked up anything justifying a production test. No. 1 Valenzuela of Honolulu, on the other hand, has only had a few minor showings. These two wells, unless a deeper productive horizon is encountered, will probably be duds. In the Ventura Avenue Field, Associated and Shell are expected to undertake additional development within the next few weeks. This projected work does not indicate any deviation from the policy of the companies with respect to restricting drilling operations but merely indicates a continuance of normal development. General Petroleum's No. 15-A Barnard, which is being carried on down to the deep 57 zone in the Ventura Avenue Field, is in a hard shale streaked with oil sand at 8,700 feet. In the Elwood Field of Santa Barbara County, Barnsdall and Rio Grande are drilling two new wells, one of which, No. 9-A on tideland permit No. 88, should be finished in the Vaqueros within a few weeks. No. 8 Doty, a recent spud, is nearing the 1,000-foot level. Some question exists as to the future status of this well due to the fact that it may be carried down into the underlying Sespe. It is of paramount importance because if this well is drilled to the lower horizon it may result in similar work by other operators. In the Goleta gas field of Santa Barbara County Standard Oil Co. has been experiencing considerable difficulty with gas in No. 1 Chase & Bryce. This has been more or less anticipated, of course, as the project is in close proximity to a high pressure gas field and consequently a sufficient quantity of heavy mud has been kept in readiness. In the Point Concepcion district of Santa Barbara County, Monterey Exploration Co. is making good footage in No. 1 Hollister, a wildcat which is being drilled in Section 33-5-33.

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well, location—	S.T.R.	Depth	Status:
Palm Ridge Oil Co., No. 1 Palms, Los Angeles Co.	2- 2-15	6,103	sd. sh. drilling
Kupfer, A. M., No. 1 Inglewood, Los Angeles Co.	17- 2-14	5,863	suspended
Pacific Gulf, No. 1 Athens, Los Angeles Co.	19- 3-13	6,094	suspended
Pacific Oil Inv. Co., No. 1 Wilmington, Los Angeles Co.	28- 4-13	3,640	cleaning out
Pacific Oil Inv. Co., No. 3 Wilmington, Los Angeles Co.	28- 4-13	....	material
Sunrise Pet. Co., No. 1 Dominguez, Los Angeles Co.	2- 4-13	2,851	gr. sd. drilling
Peoples O. & G. Co., No. 1 Compton, Los Angeles Co.	31- 3-12	rig	abandoned
Oakes & Mead, No. 1 Lyndwood, Los Angeles Co.	31- 2-12	4,940	redrilling
Community Oil Co., No. 1 Montebello, Los Angeles Co.	34- 1-11	5,281	suspended
Universal Consd., No. 1 Montebello, Los Angeles Co.	5- 2-11	6,807	br. sh. drilling
Andrus & Hutcheson, No. 1 El Monte, Los Angeles Co.	17- 1-11	1,792	suspended
Signal Pet., No. 1 Puente, Los Angeles Co.	14- 2-10	4,908	plug 3,700 ft.
Willetts Pet., No. 1 Saugus, Los Angeles Co.	25- 5-16	2,074	suspended
Alpha Oil Co., No. 1 Calabasas, Los Angeles Co.	22- 1-18	1,199	suspended
Hudson Pet., No. 1 Newhall, Los Angeles Co.	1- 3-16	1,565	suspended
Ball, W. T., No. 1 Newhall, Los Angeles Co.	34- 3-16	3,582	suspended
Big Four Oil Co., No. 1 Newhall, Los Angeles Co.	32- 4-16	2,230	suspended
Marble, Willard, No. 1 Van Nuys, Los Angeles Co.	6- 2-16	2,401	hd. sd. drilling
Plymouth Oil Co., No. 1 West Coyote, Los Angeles Co.	24- 3-11	mtl.	building rig
Nuoil Co., No. 1 Newport, Orange Co.	29- 6-10	3,901	redrilling
Mineral Expl., No. 1 Capistrano, Orange Co.	8- 8- 7	4,302	suspended
Saddleback Oil Co., No. 1 El Toro, Orange Co.	3- 6- 7	10	suspended
Placentia Dev. Co., No. 1 Placentia, Orange Co.	21- 3- 9	316	sd. drilling
Brown, W. F., No. 1 Atwood, Orange Co.	26- 3- 9	rig	rigged up
Spindle Top Oil Co., No. 1 Salton Sea, Riverside Co.	25- 7-10	3,590	cleaning out
Keeley, H. J., No. 1 Corona, Riverside Co.	21- 4- 6	625	suspended
Great American Pet., No. 1 Chino, San Bernardino Co.	18- 2- 8	2,620	hd. sd. drilling
Great American Pet., No. 2 Chino, San Bernardino Co.	18- 2- 8	1,140	sd. sh. drilling
McCarthy, C. F., No. 1 Chino, San Bernardino Co.	14- 3- 6	403	suspended
Mason Oil Co., No. 1 Salton Sea, Imperial Co.	1-17-15	640	suspended

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well, location—	S.T.R.	Depth	Status:
Standard Oil Co., No. 1 Goleta, Santa Barbara Co.	20- 4-28	3,351	br. sh. drilling
Monterey Expl., No. 1 Point Concepcion, Santa Barbara	33- 5-32	206	sd. drilling
Bolsa Chica, No. 1 Coal Oil Point, Santa Barbara Co.	tideland	4,039	suspended
Meganos Oil Co., No. 1 Purisima, Santa Barbara Co.	28- 8-34	rig	rigged up
Cuyama Oil Co., No. 1 Cuyama, Santa Barbara Co.	12-10-27	2,387	suspended
Woodrow Pet., No. 1 Rincon, Ventura Co.	4- 3-24	7,292	suspended
Barceen Pet., No. 1 Fillmore, Ventura Co.	13- 4-19	2,801	reaming
Hancock Oil Co., No. 1 Fillmore, Ventura Co.	13- 4-19	1,871	sd. sh. drilling
Oil Ridge Oil Co., No. 1 Fillmore, Ventura Co.	1- 4-19	....	build road
Los Cerritos Pet., No. 1 South Mountain, Ventura Co.	17- 3-20	....	build road
Kneiper & Atha, No. 1 Bardsdale, Ventura Co.	7- 3-19	316	suspended
Williamson & Donaher, No. 1 Simi, Ventura Co.	36- 3-18	491	hd. sd. drilling
Honolulu Consolidated, No. 1 Miguelito, Ventura Co.	23- 3-24	7,720	sd. sh. drilling
Continental, No. 2 Miguelito, Ventura Co.	23- 3-24	7,750	br. sh. drilling
C. C. M. O., No. 3-A Miguelito, Ventura Co.	23- 3-24	4,166	suspended
Midlands Pet., No. 1 Ojai, Ventura Co.	9- 3-23	7,841	redrilling
Wilshire Oil Co., No. 1 Sulphur Mountain, Ventura Co.	20- 4-21	2,000	br. sh. drilling
Mosher, J. W., No. 1 Santa Paula, Ventura Co.	32- 4-21	1,350	br. sh. drilling
Petro Producing Co., No. 1 Timber Canyon, Ventura Co.	18- 4-20	4,747	plug 1,975 ft.
Las Posas Pet., No. 1 Las Posas, Ventura Co.	22- 3-20	4,408	br. sh. drilling
International Oil Developers, No. 1 Conejo, Ventura Co.	33- 2-20	2,770	cleaning out
Hub Pet. Co., No. 1 Gould Hills, Kern Co.	22-29-21	6,840	suspended
Purman, T. H., No. 2 Gould Hills, Kern Co.	27-29-21	325	suspended
General Pet., No. 1 McKittrick, Kern Co.	10-30-21	2,309	br. sh. drilling
Casa Mira Oil Co., No. 1 Belridge, Kern Co.	29-28-20	3,706	br. sh. drilling
General Pet., No. 1 Belridge, Kern Co.	30-28-21	5,260	suspended
Cumberland Oil Co., No. 2 Devils Den, Kern Co.	17-26-18	3,270	suspended
Holloway, A. S., No. 1 Devils Den, Kern Co.	11-25-18	1,848	suspended
Lincoln Pet., No. 1 Devils Den, Kern Co.	10-25-18	2,076	hd. sh. drilling
Hanna, Tom, No. 1 Devils Den, Kern Co.	25-25-18	3,516	suspended
Pyramid Hills Oil Co., No. 1 Devils Den, Kern Co.	24-25-18	3,974	resume work
Fowler, F., No. 1 Blackwell Corner, Kern Co.	15-26-19	3,170	suspended
Associated, No. 1 Lost Hills, Kern Co.	2-26-20	4,967	br. sh. drilling
Howells Bros., No. 1 Round Mountain, Kern Co.	32-28-29	707	hd. sh. drilling
Keno Pet. Co., No. 1 Lerdo, Kern Co.	14-29-27	4,531	rebuilding rig
Seale, Fred, No. 1 Edison, Kern Co.	5-30-29	....	location
Caravel Pet. Co., No. 1 Edison, Kern Co.	19-30-30	1,801	redrilling
White, L. L., No. 1 Union Avenue, Kern Co.	6-30-28	mtl.	building rig
Shell Oil Co., No. 3 Mountain View, Kern Co.	29-30-29	3,624	hd. sd. drilling
Hogan, Sana, No. 2 Mountain View, Kern Co.	29-30-29	....	location
Bankline Oil Co., No. 1 Mountain View, Kern Co.	4-31-29	3,611	br. sh. drilling
Barnsdall Oil Co., No. 1 Mountain View, Kern Co.	31-30-29	2,343	hd. sh. drilling
Petrol Prod. Co., No. 1 Mountain View, Kern Co.	29-30-29	....	location
Long Beach Pet., No. 1 Mountain View, Kern Co.	29-30-29	1,869	redrilling
Jergins Trust, No. 1 Mountain View, Kern Co.	29-30-29	....	location
Mohawk Pet., No. 1 Mountain View, Kern Co.	30-30-29	5,958	suspended
Mohawk Pet., No. 2 Mountain View, Kern Co.	30-30-29	rig	rigging up
Comanche Oil Co., No. 1 Comanche, Kern Co.	15-32-23	rig	suspended
Badger Oil Co., No. 1 Wheeler Ridge, Kern Co.	31-11-19	3,960	br. sh. drilling
Gatton & Luethe, No. 1 Madera, Madera Co.	22-10-17	2,390	suspended
Russ Oil Synd., No. 1 Kingsburg, Fresno Co.	20-12-11	1,830	sd. sh. drilling
Bergman, Harry, No. 1 Kingsburg, Fresno Co.	12-12-11	4,148	recemented
Graham & Loftus, No. 1 Raisin City, Fresno Co.	20-15-18	5,961	hd. sd. drilling
Emerich Oil Co., No. 1 Mendota, Fresno Co.	35-13-13	3,840	sd. sh. drilling
Western Gulf, No. 1 S. P., Fresno Co.	3-17-15	2,301	sd. sh. drilling
Hogan, Dana, No. 1 Joaquin Ridge, Fresno Co.	28-20-16	6,203	br. sh. drilling
Superior Oil Co., No. 1 Mantes, Fresno Co.	6-22-16	....	material
Kent & McDonald, No. 1 Carrizo Plains, San Luis Obispo	3-32-22	3,830	suspended
Paso Robles Oil Co., No. 1 Edna, San Luis Obispo Co.	27-27-11	4,191	suspended
Guess, E. B., No. 1 Corcoran, Kings Co.	7-21-21	6,197	suspended
Brown, A. M., No. 1 Cloud, Kings Co.	10-23-19	1,205	recemented
Brown, A. M., No. 2 Cloud, Kings Co.	10-23-19	830	sd. sh. drilling
Knudsen & Schmidt, No. 1 Reef Ridge, Kings Co.	24-23-17	6,873	suspended
Magee & Stone, No. 2 Alpaugh, Kings Co.	33-24-22	3,149	plug 2,744 ft.
Dil-Harp Oil Co., No. 1 Delano, Tulare Co.	25-24-26	1,210	abandoned
Cardinal Oil Co., No. Los Banos, Merced Co.	26-10- 9	rig	rigged up
Merced O. & G. Co., No. 1 Chowchilla, Merced Co.	2- 9-16	rig	suspended
Na-Pa Oil Co., No. 1 Griffith, Napa Co.	7- 8- 3	3,742	br. sh. drilling
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	6- 2-10	4,816	hd. sh. drilling
Pacific Northern Oil Co., No. 1 Guinda, Yolo Co.	23-12- 3	4,340	gr. sd. drilling
Buttes Oilfields Co., No. 1 Marysville, Sutter Co.	35-16- 1	2,731	gas—shut in
Buttes Oilfields Co., No. 2 Marysville, Sutter Co.	34-16- 1	3,225	fishing
Tehama Pet. Co., well No. 1 Glenn Co.	4-22- 5	4,696	suspended
Orland Synd., No. 1 Orland, Tehama Co.	31-23- 3	3,743	suspended
Marker Drlg. Co., No. 1 Orland, Tehama Co.	21-25- 5	3,030	suspended

Now Six Operations in Moffat County, Colo.; Big Producer in Hobbs Pool, New Mexico

By TOLBERT R. INGRAM
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Aug. 7.—Shell Petroleum Co.'s No. 4-B McKinley, in the Hobbs Pool in New Mexico, made 22,940 bbls. initial, putting it close to the top in the list of large producers in that field. One location was made in the Hobbs Pool and Continental Oil Co. will drill an offset to its big producer in the Jal area. One new location was reported in Eddy County.

Six operations are now under way in Moffat County, Colorado, following a new location made by Texas Co. in the Hiawatha district. There were no completions and one new location.

In Wyoming, Mountain Fuel Supply Co.'s No. 2 Cappers was completed in the Baxter Basin Field for 17,000,000 feet of gas, and Texas Co. completed a 6,000,000-foot gasser at Alkali Butte. One new location was made in Carbon County, another in Big Horn County and three in the Osage Field.

One completion, estimated at 30 bbls., and one new location were reported in the Cut Bank Field in Montana. A small producer was completed in the Whitlash district in Liberty County.

NEW MEXICO

Lea County

Shell Petroleum Corp.'s No. 4-B McKinley, SW NE SW Section 30-18-38, in the northeastern part of the Hobbs Pool, was completed at 4,234 feet and proved to be one of the largest producers in the pool. When gauged for proration it made 22,940 bbls. of oil and 16,748,000 feet of gas the first 24 hours through the casing. When gauged through the tubing it made 6,610 bbls. and 5,239,000 feet initial. This is the Shell company's fourth well completed on the 160-acre tract. Its initial production was exceeded by Shell's No. 2-B McKinley, SE cor. SW Section 20, one-fourth mile to the southeast, which made 23,911 bbls. the first 24 hours. The other two made 8,489 and 14,640 bbls. No. 4-B McKinley topped the anhydrite at 1,595 feet and the salt at 1,775 feet. The top of the brown lime was at 2,895 feet and top of the pay at 4,172 feet.

A new location was released by the Shell company in its No. 3 Grimes, SW NE SW Section 28-18-38, an outside well on the northeastern side of the pool, one-third of a mile to the northwest and southeast of its Nos. 1 and 2 Grimes. Stanolind Oil & Gas Co.'s No. 26 Byers, C SE NW Section 3-19-38, and No. 11 Capps, C NE SW Section 3, are shut down for orders after completing cellars.

In the Lea Pool, Texas Co.'s No. 3-A Lynch, C NW NE Section 34-20-34, which marks a slight extension fo the proven area, has shown an increase of 30 bbls. of oil and 10 bbls. of water over last week in a swabbing test and at last reports was making 100 bbls. of oil and 30 bbls. of water. It will be treated with acid before being listed as a completion. Cranfills & Reynolds' No. 4 State, C Lot 10, Section 2-21-33, is bottomed at 1,755 feet and running 10-inch.

In the Jal Pool, Continental Oil Co. has made a location for its No. 2 Sholes B-13, C NW NW Section 13-25-36, a north offset to its No. 1 Sholes B-13, completed last March at 3,270 feet for 2,280 bbls. of oil and 40,000,000 feet of gas, the best well so far completed in the pool. E. B. Guess' No. 1 Conditt, C SW SW Section 12-25-36, is drilling plug after cementing 10-inch at 530 feet. Continental Oil Co.'s No. 2 McCallister A-24, NW NE NE Section 24-26-36, is rigigng up cable tools.

In the South Eunice area, the Carter and Continental Oil companies' No. 1 State, C NE NE Section 28-22-35, is drilling at 1,205 feet in red sand.

Eddy County

Drilling operations in Eddy County showed a substantial increase this week. One new location was reported in the Carlsbad area in Stovall & Marshall's No. 1 Mock, C SE SE Section 29-24-27. Ralph Spearow and others' No. 1 McClellan, SW NW NE Section 22-22-23, in the western part of the county, a test of the thick lime formations, is reaching a critical stage and is drilling at 3,304 feet in sandy gray lime. It has had a number of oil and gas shows, but these will not be shot and tested until the objective is reached. The same interests, operating as Pecos Valley Drilling Co., in their No. 1 McIntyre, NW NW Section 27-23-25, Dark Canon district, are drilling at 40 feet in white lime. It was spudded July 21.

Flynn, Welch & Yates' No. 66 State, NW SE SE Section 30-18-28, Artesia area, is drilling at 600 feet in gypsum, and Western Drilling Co.'s No. 2-A Green, C SW NE Section 29-17-29, Jackson area, is shut down at 2,336 feet. C. H. Lockhart and others' No. 2 Root, C SW SW Section 7-17-30, Maljamar area, is shut down at 2,601 feet in lime, and Grayburg Oil Co.'s No. 4 Burch, C SE NW Section 19-17-30, spudded July 19 and is running the 10-inch at 380 feet.

Van P. Welch and others' No. 1 State, NW NE NE Section 22-17-28, Artesia district, spudded July 23, had water at 110 feet and is running 10-inch at 115 feet.

Dona Ana County

Viking Oil Co.'s No. 2 Cox Ranch, SW NW NW Section 26-23-5e, is bottomed at 900 feet and running 8¼-inch. This location is reported to be 200 feet north of No. 1, abandoned at 3,215 feet in 1931 when the derrick was pulled in. It had a show of oil at 2,310-13 feet and gas at 2,800-50 feet.

San Miguel County

Cabra Springs Oil & Gas Co.'s No. 1, C NE NE Section 22-12n-22, Pino Mesa, is drilling at 1,380 feet in hard white sharp sand and underreaming 10-inch to land at around 2,500 feet, if possible.

COLORADO

While it is expected that at least one more test will be drilled in Weld County, in northeastern Colorado, this year, no location has been released. It is understood several companies will put down a test jointly, probably west of Continental Oil Co.'s No. 1 Anthes, which was abandoned recently, but that final arrangements are being delayed awaiting the completion of seismograph surveys before making a location.

Moffat County

Moffat County, in the northwestern part of the state and across the range from the recent activity in northeastern Colorado, now has six operations under way. A new location on the Bartram Dome in the Hiawatha district was released this week in Texas Co.'s No. 1 A. P. Van Schaick, SW cor. Section 19-12n-100. It is a north offset to Mountain Fuel Supply Co.'s No. 1 Wheeler. It is moving in rig from Texas Co.'s No. 1 Berlin. Mountain Fuel Supply Co.'s No. 1 Wheeler, SE NW NW Section 30-12-100, is drilling at 780 feet, and its No. 2 Florence Wilson, C NE NE Section 22-12-100, is drilling at 4,853 feet.

Mountain Fuel Supply Co.'s No. 1 Hatch, SE NW SW Section 9-11n-101, Sugarloaf district, is shut down at 3,519 feet waiting for a larger rig.

Rocky Mountain Gas Co.'s No. 1 Eberle, SE SW SE Section 9-6n-91, Craig Dome, is drilling at 2,500 feet. Since shutting off a large flow of water at 1,290 feet and testing a show of oil at 1,310 feet, total depth, it is reported to have had more shows of oil and gas just above 1,800 feet. This test is on the west and upthrow side of a fault which runs across the structure in a generally east-west direction, while the discovery well 1,500 feet to the east and north, which came in as a gasser at 2,800 feet, is on the east side of the fault.

William A. Myers and others' No. 1 State, NW SW SW Section 16-4n-101, Skull Creek, is supposed to have resumed this week at 3,250 feet to go to 4,200 feet, if necessary, but no report has been received since the crew went in with Mr. Myers.

The Texas Co.'s No. 1 Iles Investment Co., SE NW Section 23-4n-92, Iles Dome, spudded June 24 with rotary and is drilling at 1,900 feet with the Sundance as its objective.

Rio Blanco County

California Co.'s No. 1 California-Raven, C NW SE Section 30-2n-102, Rangely Dome, is running rods at a total depth of 6,315 feet preliminary to making a pumping test. Earthen reservoirs with a capacity of about 15,000 bbls. have been completed. The company is giving out no information regarding production in tests made since the well was given a shot of 1,000 quarts.

Routt County

A new operation north of production in the Tow Creek Field is reported in Western Colorado Oil Corp.'s No. 1 Rapson, 1,400 feet north or northwest of the nearest producer. Location is reported to be approximately in the SW SW Section 32-7n-86. Ike Mosher has the contract and has moved in a rig from Walden. Wells and Destin, of California, are mentioned in connection with the operation. It is close to an igneous intrusion.

Larimer County

C. Leonard Smith's No. 2 Union Pacific, SW cor. Section 31-12n-69, Sand Creek, is shut down at 660 feet.

Adams County

Hills Dome Lease Development's No. 1 Hills, SE cor. Section 27-3s-64, Watkins district, which has been shut down for several weeks at 4,190 feet, is reported negotiating for a string of 6⅝-inch pipe to be run before drilling is resumed.

Crowley County

Oil City Petroleum Co.'s No. 4 Crowley, NE SE NE Section 11-32-1e (cor.) Chromo district, is shut down at 511 feet, and its No. 6 Crowley, C NW NW Section 13-32n-1e, is in the Dakota at a total depth of 235 feet.

Fremont County

Cherry Creek Placer Co.'s No. 1 Lucas, SW cor. NE Section 32-18-69, Florence district, is drilling at 2,290 feet. It had a show of oil, about one-third of a bailer, at 2,270 feet.

Las Animas County

Continental Oil Co.'s No. 1 Maxwell grant, NE NW NE Section 29-34-68, Tercio area, is fishing for bit at a total depth of 1,360 feet.

Prowers County

Shastatex Oil & Gas Co.'s No. 1 Lotus Oil, NW NE NE Section 15-23-46, Lamar district, is underreaming 10-inch to land at 1,550 feet at which depth it had a small show of oil in shale.

WYOMING

Carbon County

A joint well to be drilled by Mutual Oil Syndicate and Rocky Mountain Gas Co. in their No. 5 Dutton Creek Oil & Gas Co., NE NW SE Section 12-18-78, Dutton Creek area, is rigging up rotary. Mutual Oil Syndicate's No. 9 Dutton Creek Oil & Gas, NW NE Section 12-18-78, is drilling at 3,067 feet.

Fremont County

The Texas Co.'s No. 2 State-Ridgway, SE SW SW Section 36-34-95, Alkali Butte, has been completed as a gas well at 4,600 feet after plugging back from a total depth of 5,460 feet. It is estimated at 6,000,000 feet per day in a sand in the Morrison formation. It missed the Dakota and the Lakota had water. It drilled through the Sundance and stopped in the top of the red beds. The well spudded more than a year ago and had an unusual run of bad luck.

Sweetwater County

Mountain Fuel Supply Co.'s No. 2 Cappers, SW cor. NW Section 12-19-104, North Baxter Basin, was completed at 3,162 feet for 17,000,000 feet of gas per day with a rock pressure of 1,270 pounds. The sands in the Dakota formation were cut at 3,048-3,162 feet. Same company's No. 3 Poston, C NW NW Section 22-16n-104, South Baxter Basin, is spudding.

Washakie County

Bales Oil Trust's No. 2 Brome, NE NW NW Section 31-48-90, Hidden Dome, is testing at a total depth of 1,515 feet. The top of the first Frontier was at 1,440 feet and of the second Frontier at 1,500 feet. L. S. Keye and others' No. 1 Bales, NE SW NW Section 31-48-90, is rigged and ready to spud, and D. L. McDonald, and others' No. 1 Wheeler, SW cor. SE Section 30-48-90, spudded July 24.

Hot Springs County

C. C. Landis and others' No. 1, SE NE NW Section 21-43-92, Kirby Creek, is drilling at 610 feet and is expecting the Frontier at around 800 feet. Empire State Oil Co.'s No. 4 Republic, NE cor. NW Section 14-44-98, Hamilton Dome, is drilling at 1,315 feet.

Big Horn County

An operation not heretofore reported is B. C. Prescott's No. 1 Government, Lot 2, Section 21-52-93, Crazybull area, drilling at 300 feet in shale.

Natrona County

Mutual Oil Syndicate's No. 1 Boyer, SW NE NE Section 23-35-79, Midway Dome, is waiting at 2,421 feet after rigging heavy rotary to drill deeper, for permission from the government to drill. It was drilled to 2,421 feet as a core test to the Shannon in an effort to find the top of the structure for another deep well to the Frontier. The hole is 9⅝ inches in

diameter at the bottom. That size hole at that depth cored to test out structural features is said to have puzzled officials at Washington until it was explained that a special outfit built under the supervision of S. H. Keoughan was used in this and other core holes. These were carried down to the Shannon with that size bit so that the best location could be drilled on down.

Triangle Oil Co.'s No. 2 Ames, SE SE Section 29-36-85, North Boone Dome, is testing a very good oil show in sand at 630-70 feet. Total depth is 700 feet. The show is in the Shannon sand.

Converse County

James A. Brady and others' No. 1 Cashner, NW NE SW Section 17-31-71, Warm Springs district, is drilling at 940 feet, probably near the base of the Amsden. R. J. Dilger and others' No. 1, Section 32-31-72, Poison Lake, suspended operations at 800 feet on account of a crooked hole which could not be straightened.

Weston County

Three new locations in the Osage Field were released by Chadron Osage Oil Co. in its No. 20, C W L SW SW Section 14-46-64, moving rig to location; No. 23, NW NE SW Section 14-46-64, rigging up; and No. 22, C N L NE SW Section 14-46-64, rigging up.

Lincoln Oil Syndicate's No. 1, SW cor. SE Section 10-46-64, is drilling at 2,120 feet, and Riggs Oil Co.'s No. 3, SE NE Section 16-46-64, is drilling at 1,100 feet. Wyoming Oil & Gas Co.'s No. 19, SE NW SE Section 19-46-63, is drilling at 1,000 feet.

MONTANA

Glacier County

One completion and one new location were reported in the Cut Bank Field. Hannah-Porter Co.'s No. 1 Britton, NW NE NE Section 23-34-6w, is swabbing 30 bbls. per day from a total depth of 2,893 feet after a shot with 180 quarts at 2,858-85 feet. Nyhagen-Bell's No. 1 Anderson, SE NE SW Section 26-35-6w, is a location. This well, while in what is considered proven territory, is in the center of a large block where very little drilling has taken place.

Alberta-Pacific Consolidated Oil Co.'s No. 2 Matson, SE NE SW Section 14-34-6w, is making a water test at 2,883 feet, total depth. The Stewart at 2,835-63 feet carried water. The 6⅝-inch was cemented at 2,881 feet. Same company's No. 2 Kiesel, SE cor. NW Section 11-34-6w, is drilling at 2,400 feet. A. B. Cobb's No. 1 Walburger, SW cor. SE Section 35-34-6w, topped the Colorado at 460 feet and ran the 13⅜-inch at 530 feet. An effort of operators to get together on an agreement to locate wells in the center of 40's failed in the last-named operation.

Dakota-Montana Oil Co.'s No. 2 Haglund, Sr., NE NE Section 14-34-6w, is rigging up, and its No. 1 Matson, SE NE NW Section 14-34-6w, is drilling at 2,545 feet. W. M. Fulton and others' No. 1 Haggerty, NE cor. Section 16-34-6w, which shut down on top of the sand at 2,952 feet, has resumed drilling. J. W. Johnson's No. 1 Ewing, C NE NE Section 3-34-6w, is drilling at 450 feet with a hole full of water.

Montana Headlight Oil Co.'s No. 1 Britton, NW SW NE Section 14-34-6w, failed to get a water shutoff and is recementing the 10-inch at 710 feet. Its No. 1 Larson-Tarrant, C SW NE Section 12-34-6w, is building rig, and its No. 1 Williams, NW cor. NE Section 11-34-6w, is drilling at 2,370 feet.

Montana Power Gas Co.'s No. 1 Brown, C NE Section 31-35-5w, topped the Kootenai at 2,085 feet and is drilling at 2,175 feet. Its No. 1 Wilbert fee, SW cor. Section 1-35-5w, topped the Colorado at 492 feet and cemented the 13⅜-inch at 512 feet with 50 sacks. Same company's No. 1 Vermont Loan & Trust, Sections 21 and 28-36-5w, topped the Colorado at 520 feet and cemented the 13⅜-inch at 530 feet.

R. C. Tarrant's No. 2 Haglund, Jr., C NW SE Section 13-34-6w, topped the Darling at 2,786 feet, drilled to 2,825 feet and is preparing to swab. The oil is standing 800 feet in the hole. His No. 3 Haglund, Jr., C SE NE Section 13-34-6w, is spudding at 250 feet. Tarrant's No. 1 Hope, C SW SW Section 18-34-5w, after being given another shot of 60 quarts, has 900 feet of oil in the hole and preparing to swab. It is a diagonal offset to his No. 1 Miller, which was completed as a flowing well.

Texas Co.'s No. 1 Fisk, C NW NE Section 14-35-6w, is drilling at 1,049 feet. This is the only rotary operation in the field. The 10-inch was cemented at 148 feet and it is planned to drill with 11-pound mud to the top of the pay sand and circulate cement behind the producing string in accordance with an understanding reached at a meeting of operators at Shelby. The meeting was held to discuss casing practices in the field following the advent of the rotary. Bruce Radigan, state oil and gas inspector, presided. Cable tool operators have been setting surface pipe in the top of the Colorado at 450 to 550 feet to shut off water in the Eagle sand. The setting of the pipe higher up in rotary operations on condition that cement be circulated behind the producing string to shut off the water sands was approved.

Yukon Oil Co.'s No. 1 Krueger, C SW SW Section 14-37-5w, North Cut Bank, topped the Colorado at 312 feet, cemented the 13⅜-inch at 354 feet and is drilling at 500 feet.

Musselshell County

Hawkeye Oil Co.'s No. 1, NW NE NE Section 20-11n-23, Willow Creek, is drilling at 1,000 feet.

Petroleum County

Oregon-Flatwillow Oil Co.'s No. 1, SE cor. Section 3-13-26, Flatwillow district, is drilling at 1,400 feet.

Liberty County

Western Natural Gas Co.'s No. 2 Hicks, NW NE Section 26-37-4e, Whitlash district, which showeu for 2 bbls. per day in the first sand at 1,606-50 feet, cut the second sand at 1,780-1,838 feet and will make a small pumper.

Imperial Oil Renews Drilling in Alberta Field; Royalite to Take Over Home Oil Interests

By VICTOR LAURISTON
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Aug. 5.—Official figures issued by the Alberta lands and mines department at Edmonton show a total crude oil production in June from all Alberta fields of 100,624 bbls., compared with the May total of 74,978 bbls. and the highest figure in more than a year. The June total, however, includes 1,105 bbls. from the Red Coulee Field and 15,175 bbls. from Turner Valley which were produced prior to June and not previously brought into account. Allowing for this production, however, the June totals still show an appreciable increase. The increase in Turner Valley naphtha production is due to the more efficient operation and recovery since the new absorption plant of Imperial Oil, Ltd., has been in operation.

Light Crude Producer

In the Central Turner Valley Field, New McDougall-Segur Oil Co.'s No. 6, LSD 11, Section 12-20-3w5, is being finished around 3,185 feet and is preparing to test light crude production from the McDougall-Segur sand at this depth. Crude was previously met in smaller quantities at 2,530 and 2,795 feet and the main production in the McDougall-Segur horizon at 3,169 feet. Production from the latter sand is a 54-degree light green crude, similar to that encountered in other wells in this area. Oil rose 550 feet or more in the hole. The strike was made shortly after 8-inch casing had been landed at 3,150 feet. Location is fairly close to New McDougall-Segur's No. 4 and Widney Petroleums' No. 1, both of which are good light crude producers. Good light crude production has been met in a number of tests in this area, though attempts to get crude naphtha by deepening to the limestone have not proved very satisfactory. The drilling of New McDougall-Segur's No. 6 was in charge of Roy Widney; the test made unusually good time, having been spudded April 18, with 10 days off while the crew were working on another well. New McDougall-Segur Oil Co. has a small refining plant in the field which handles its light crude production. No definite estimate of production has been made pending completion of the tests, but No. 6 looks like a good commercial well.

Becker Syndicate's No. 2 Anaconda, LSD 15, Section 28,18-2w5, is drilling around 3,500 feet. Test has been logging closely with other wells in this area and has already a gas flow estimated at 6,000,000 feet a day from the upper sands.

Shareholders of British Dominion Oil Development Corp. held their annual meeting recently at Calgary, when announcement was made of a decision to drill British Dominion's No. 4 on acreage secured in Section 28-18-2w5, in the South Turner Valley Field. The company has already drilled three wells in Central Turner Valley, its No. 1 finishing dry at the then record depth of 6,600 feet without reaching the lime, while two tests in Section 12-20-3w5 finished fair naphtha producers in the lime. The shareholders re-elected the following officers: President, J. H. Goodwin; vice president, Dr. M. C. Costello; secretary-treasurer, Hardie Turnbull; directors, Dr. R. M. Cook, W. Matthews, T. Langley Webb.

Water Is Investigated

Alberta government engineers are making a survey of Sioux City Oil Co.'s No. 1 Well in Section 1-20-3w5 to determine the source of 900 feet of water recently discovered in the well. The presence of water in the well, which previously had a small wet gas and crude naphtha production from the limestone, was reported to the petroleum and natural gas division of the Alberta lands and mines department by W. E. McLeod of the Sioux City Co., who was unable to determine the source of the water. In the original drilling, surface water was cemented off.

Sioux City's No. 1 is in LSD 16, Section 1-20-3w5, in the heart of the Central Turner Valley Field. It bottoms at 6,190 feet. Surface water was shut off at 138 feet. The test got the top of the lime at 4,385 feet and as the wet gas flow proved small, drilling was continued for 1,805 feet in the lime. For a time the well, completed in 1930, had a small naphtha recovery; but this fell off to such an extent it was not profitable. The bottom is 2,170 feet below sea level

Discussing the situation, W. Calder, director of the petroleum and natural gas division, said: "I think the trouble must be from leakage of water through the casing. No bottom water has yet been found in Turner Valley, and it is unlikely that water intrusion in the limestone has commenced."

Several wells, including Sterling Pacific's No. 1 in the south field, have been drilled more than 1,800 feet into the lime without encountering water; and McLeod Oil Co.'s No. 4, in the same LSD as Sioux City's No. 1, was drilled through the lime into the underlying formations without developing water trouble.

Sale of Home Wells

It is semiofficially announced that arrangements have been practically completed whereby Royalite Oil Co., the major subsidiary of Imperial Oil, Ltd., in the Turner Valley Field, will take over the producing wells, acreage and other oil interests of Home Oil Co. in South Turner Valley. When the deal is completed, Home Oil Co.'s interest in the oil business will be confined to a 25 per cent interest in Home Oil Distributors, Ltd., a Vancouver organization that retails petroleum products in British Columbia.

Oil City Test

In the old Oil City Field, southwestern Alberta, Oil City Royalties' No. 1, Section 30-1-30w4, is reported drilling below 585 feet after encountering further oil shows. The drill is working in an oil-saturated sand. Commercial production is looked for around 1,020 feet.

Twin River Test

On the Twin River structure south of Letbridge, Nordon-Roney's No. 2 Twin River, LSD 11, Section 2-2-20w4, is cleaning out after being given a shot of 50 quarts in the limestone. The test encountered the Madison limestone at 3,900 feet, getting a gas flow, unofficially estimated at 8,500,000 feet a day, at 3,907 feet and an oil sand at 3,930 feet. Estimates of 50 to 100 bbls. a day are unofficial.

The field is about 11 miles north of the new Stewart Pool of North Cut Bank Field in northern Montana, and less than a mile north of a previous test drilled by Parco Oil Co. on the same structure. It is about 25 miles north of the original Cut Bank Field. It is claimed by some oil men that the Twin River structure is a continuation of the Cut Bank geological trend, and that crude from the Nordon-Roney well is very similar to that from the Sweeney-Santa Rita discovery well in the Stewart Pool.

Reserve Dome Test

On the Alberta end of the international Reserve Dome structure, Rialto Oils' No. 1, LSD 4, Section 15-1-9w4, is moving derrick and rig from Mayland Southern's No. 1, Casing is also being brought from Capitol Oil & Natural Gas Co.'s abandoned well in the same area.

Imperial Resumes Activity

Imperial Oil, Ltd., has announced a renewal of drilling activity by the company in the Alberta fields, after more than a year of inactivity. The new area to be tested is the Comrey structure near Manyberries, and south of Medicine Hat, in the southeastern section of the province. The company holds some 7,600 acres of leases on the structure. About 25 miles due south, on the Montana side, a fairly large gas production has been secured. It is claimed that the Comrey structure is a closed structure, with good possibilities of crude oil. The test will be drilled on a joint contract by D. A. Macdonald and associates of Vancouver, B. C., and Imperial Oil, Ltd., on a location to be selected by Imperial geologists. Drilling equipment is being moved south, and the test will spud in this month.

Wainwright Development

Systematic development of the Wain-

(Continued on Page 78)

Gulf Coast Fields and Wildcats

(Continued from Page 54)

The Texas Co.'s No. 8 Wilburn (W.O.), Henry Griffith League ..... Set 39 ft. screen 5,188 ft.

Texas Gulf Prod. Co.'s No. 3-C Kirby (W.O.), Henry Griffith League ..... Set 63 ft. of 7-in. O.D. screen 4,985 ft; comp. 1,350 bbls. P.L. oil; ⅝-in. choke; 180 lbs. pressure.

Yount Lee Oil Co.'s No. 20 Chambers County, Wm. Bloodgood Sur., 350 ft. from NW line and 50 ft. from SW line of lease ..... Set 29 ft. of 5 9/16-in. screen 4,808 ft.; comp. 540 bbls. P.L. oil; ⅝-in. choke; 150 lbs.

Yount Lee Oil Co.'s No. 21 Chambers County (W.O.), Wm. Bloodgood Sur. ..... Drlg. hard sand and lime 2,077 ft.

Yount Lee Oil Co.'s No. 22 Chambers County, Wm. Bloodgood Sur., 200 ft. from W line, 262½ ft. from N line of lease ..... Drlg. salt 2,958 ft.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 18 Mayes, E. H. R. Wallis Sur., 205 ft. N and 425 ft. W of No. 1 Lost River ..... Drlg. sand showing oil 3,310 ft.

RABBS RIDGE—FORT BEND COUNTY

Gulf Prod. Co.'s No. 4-A Gubbels, Samuel Kennedy Sur... Comp. 55 bbls. per hour; ⅝-in. choke, 5,380 ft.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 10 T. R. Booth, J. Rabb Sur. ..... Spudded.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 15 H. P. Lockwood, J. Rabb Sur., 2,095 ft. from W line, 311 ft. from N line ..... Drlg. shale 5,204 ft.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 20-A Lockwood & Sharp, 1,867 ft. from W line, 349 ft. from S line of lease ..... Cmtd. 7-in. csg. 5,102 ft.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 12-B Lockwood & Sharp, J. Rabb Sur., 1,729 ft. from E line, 1,129 ft. from S line of "B" lease ..... Drlg. shale 2,989 ft.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 9 Meyers, J. Rabb Sur., 1,028 ft. E of No. 8 ..... Comp. 64 bbls. per hour; ⅝-in. choke, 5,349 ft.

Wes-Len Oil Co.'s No. 1 Mays, Samuel Kennedy Sur., 228 ft. from E line, 300 ft. from S line of 14-ac. tract ..... Spudded.

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 1-B Broussard & Orme, 126 ft. E of center of W line of M. Dunman Sur. ..... Drlg. hard sand 4,500 ft.

Yount Lee Oil Co.'s No. 36 Cade, N. Fitzsimmons Sur., 600 ft. from S line, 240 ft. E of No. 34 ..... Drlg. hard sand 4,725 ft.

Yount Lee Oil Co.'s No. 1-B Cade, N. Fitzsimmons Sur., 488 ft. from S line, 320 ft. from E line ..... Drlg. shale and lime 3,904 ft.

Yount Lee Oil Co.'s No. 17 Smith, M. Dunman Sur., 300 ft. SW of No. 14 ..... Drlg. sand and shale 5,800 ft.

Yount Lee Oil Co.'s No. 18 Smith, M. Dunman Sur., 175 ft. S of No. 9 ..... Drlg. hard sand 4,720 ft.

BATSON—HARDIN COUNTY

Danciger O. & R. Co.'s No. 1 Hooks, 95 ft. S, 150 ft. W of NE cor. of Strip 12, Donoghue Sur. ..... Drlg. rock 4,824 ft.

TOMBALL—HARRIS COUNTY

Continental Oil Co.'s No. 1 Agnes Theis, Joseph House Sur., 3,474 ft. from S line, 165 ft. from W line of 50-ac. tract ..... Sandy shale showing oil 5,587 ft.; cmtd. 7-in. csg. 5,568 ft.

Humble O. & R. Co. and Magnolia Pet. Co.'s No. 1 Bloecher, J. N. Hooper Sur. (Abst. A-375), 1,050 ft. from S line, 650 ft. from W line ..... Derrick.

Humble O. & R. Co. and Magnolia Pet. Co.'s No. 1 Amiel Doege, C. Goodrich Sur., 1,399 ft. N, 1,013 ft. W of SE cor. 90.63 acres ..... Sand 5,586 ft; set screen.

Humble O. & R. Co. and Magnolia Pet. Co.'s No. 1 Gebhart, C. W. Hahl Sur., 1,399 ft. from N line, 350 ft. from W line ..... Derrick.

Humble O. & R. Co. and Magnolia Pet. Co.'s No. 1 Herbert Reid, Chauncy Goodrich Sur. ..... Set screen 5,561 ft.

Humble O. & R. Co. and Magnolia Pet. Co.'s No. 1 Emil Schultz, 1,107 ft. N, 900 ft. E of SW cor. of 122.71 acres ..... Coring sand and shale 5,487 ft.

Magnolia Pet. Co. and Humble O. & R. Co.'s No. 1 Wm. Rudel (63 acres), Joseph House Sur., 350 ft. out of SW cor. of lease .... S.W. sand 5,610 ft.; cmtd. hole to 5,553 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 100-A Jordit, Jordit Sur. ..... Sand 879-910 ft.; comp. pumping 40 bbls. per day.

Rio Bravo Oil Co.'s No. 101-A Jordit, Jordit Sur. ..... Derrick.

Seven Wells Corp.'s No. 1 Teels, T. C. Gaines Sur., NW cor. of 883-ac. tract ..... S.D. 6,273 ft.

SOUR LAKE—HARDIN COUNTY

Arlis Pet. Co.'s No. 1 Sour Lake Bank, NW cor. Sec. 69, Blk. 11, H.&T.B. Sur. ..... No report.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds Co.'s No. 11 Moores Bluff, Duncan Sur., 2,100 ft. from N line, 1,069 ft. from E line of 632-ac. tract ..... Drlg. shale 2,015 ft.

HULL—LIBERTY COUNTY

Miramar Oil Co.'s No. 2 Phoenix, Jesse DeVore Sur., 25 ft. due N of No. 1 ..... Drlg. shale 1,250 ft.

The Texas Co.'s No. 8 Hannah (W.O.), Jesse DeVore Sur. ..... T.D. 5,133 ft; milling out of 9⅝-in. csg. 4,292 ft.

CONROE—MONTGOMERY COUNTY

Alpha Pet. Co.'s No. 8 Keystone Mills, Lemuel Smith Sur., 366 ft. S line, 466 ft. W line ..... Drlg. sand 5,055 ft.

Alpha Pet. Co.'s No. 9 Keystone Mills, Lemuel Smith Sur. ..... Drlg. shale 4,827 ft.

Alpha Pet. Co.'s No. 1-B Krohn, S. H. Bryan Sur., center of 20-ac. tract ..... Comp. 75 bbls. per hour; ⅛-in. choke, 5,100 ft.

Bishop Oil Corp.'s No. 2 Smith & Ratcliff, W. S. Rhodes Sur., 292 ft. from W line, 316 ft. from S line of lease ..... Comp. 95 bbls. per hour; ⅛-in. choke, 5,125 ft.

Gulf Coast Drlg. & Prod. Co.'s No. 2 J. T. Bertrand, C. W. Wagers Sur., 334 ft. from NW cor. ..... Drlg. sand and shale 5,005 ft.

Gulf Coast Drlg. & Prod. Co.'s No. 11-A Keystone Mills, A. James Sur., 467 ft. from N line, 933 ft. S of No. 10 ..... Comp. 424 bbls. first 24 hrs.; ¼-in. choke, 5,145 ft.

Gulf Coast Drlg. & Prod. Co.'s No. 12-A Keystone Mills, A. James Sur., 467 ft. from W line, 933 ft. S of No. 11 ..... Derrick.

Gulf Coast Drlg. & Prod. Co.'s No. 13-A Keystone Mills, A. S. James Sur., 933 ft. from N line, 466 ft. from E line ..... Drlg. shale 2,240 ft.

Harrison & Abercrombie's No. 3 Massey, J. Massey Sur., 500 ft. from N line, 466 ft. from E line ..... Drlg. shale 2,410 ft.

Houston Oil Co.-Tide Water Oil Co.'s No. 3 Hamman, G. B. Stewart Sur., 1,214 ft. from W line, 1,690 ft. from S line ..... Derrick.

Houston Oil Co.-Tide Water Oil Co.'s No. 3 Hooper, I.&G.N. Sur. No. 11, 667 ft. S of No. 1 in center E and W ..... Drlg. sticky shale 2,160 ft.

Houston Oil Co.-Tide Water Oil Co.'s No. 4 Moore, Lemuel Smith Sur. ..... Drlg. sticky shale and lime 3,972 ft.

Humble O. & R. Co.'s No. 8 Dobbins, Ransom House Sur., 1,084 ft. E of No. 7 ..... Drlg. sand and shale 5,033 ft.

Humble O. & R. Co.'s No. 1 Easterly, C. A. West Sur., 330 ft. from E line, 15 ft. from N line of Blk. 13.... T.D. 5,133 ft; cmtd. csg.

Humble O. & R. Co.'s No. 6 Emory, W.C.C.R.R. Sur. No. 13, 963 ft. from N line, 443 ft. from W line ... Comp. 100 bbls. per hr.; ½-in. choke, 5,142 ft.

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Humble O. & R. Co.'s No. 5-B Hirsch, D. McIntyre Sur., 330 ft. from E line, 350 ft. from S line ..... Comp. 79 bbls. per hour; ½-in. choke, 5,138 ft.

Humble O. & R. Co.'s No. 6 L. B. McComb, Lemuel Smith Sur., 466 ft. from S line, 500 ft. from W line.. Drlg. shale 952 ft.

Humble O. & R. Co.'s No. 29 Moore, Lemuel Smith Sur., 1,569 ft. NE of No. 33 ..... Drlg. shale 3,322 ft.

Humble O. & R. Co.'s No. 37 South Tex. Dev. Co., Theo. Slade Sur., 933 ft. NE of No. 36 ..... Drlg. shale 944 ft.

Humble O. & R. Co.'s No. 40 Moore, Lemuel Smith Sur., 1,200 ft. SW, 300 ft. SE of most easterly NE cor. of lease ..... Cmtd. csg. 2,595 ft.

Humble O. & R. Co.'s No. 3 E. Moorehead, L. A. Lang Sur., 500 ft. S line, 410 ft. E line ..... Drlg. shale 3,333 ft.

Humble O. & R. Co.'s No. 36 South Tex. Dev. Co., Theo. Slade Sur., 1,010 ft. NE of No. 35 ..... Comp. 72 bbls. per hour; ½-in. choke, 5,133 ft.

Humble O. & R. Co.'s No. 1 Rogers, C. A. West Sur., 410 ft. from N line, 300 ft. from E line of lease .... Comp. 2,500,000 ft. dry gas 5,-144 ft.

Humble O. & R. Co.'s No. 1 Woodson, C. A. West Sur., 9 ft. from N and W lines of Lot 47 ..... Comp. 65 bbls. per hour; ½-in. choke, 5,150 ft.

Mo-Tex Oil Corp.'s No. 1 Krohn, S. Bryan Sur., 330 ft. from S and W lines ..... Cmtd. 7-in. csg. 5,050 ft.

Navarro Oil Co.'s No. 2 Perry hrs., T. M. Wiggins Sur., 382 ft. W line, 770 ft. S line ..... No report.

Showers & Moncrief's No. 3-A Dunn, Wilson Strickland Sur., 666 ft. N line, 410 ft. W line of lease .... Drlg. shale 4,420 ft.

R. D. Simonton, receiver's No. 1 Hooper-Coffield, J. W. Watson Sur., center of N 20 acres of H. H. Coffield 40-ac. lease ..... Drlg. sticky shale 4,810 ft.

Sun Oil Co.'s No. 2 Clark, S. Y. Sutton Sur., 467 ft. from W line, 409 ft. from S line ..... Drlg. shale 3,425 ft.

Texas Co.'s No. 14-A Rhodes, W. S. Rhodes Sur., 150 ft. due E No. 14 ..... Drlg. sand 5,002 ft.

Tide Water Oil Co.'s No. 12 Dean, W. C. C. Lynch Sur., 330 ft. out of NW cor. ..... Coring shale and sand 5,150 ft.

Tide Water Oil Co.'s No. 7 Krohn, S. H. Bryan Sur., 330 ft. SW cor. ..... Drlg. shale and shells 4,790 ft.

Tide Water Oil Co.'s No. 24-A Lewis, C. B. Stewart Sur., 1,400 ft. from W line, 1,345 ft. from N line ... Rigging.

WEST COLUMBIA—BRAZORIA COUNTY

Texas Co.'s No. 11 Abrams (W.O.) ..... Old T.D. 2,852 ft; sidetracked at 2,762 ft; drlg. sand 2,818 ft.

HUMBLE—HARRIS COUNTY

Texas Co.'s No. 34 Stephenson (W.O.), J. O. Stephenson Sur. ..... Drlg. sand and shale 2,583 ft.

LIVINGSTON—POLK COUNTY

Polk County Oil Corp.'s No. 2 Allen & Hilbrager (Craig), A. Viesca Sur., 330 ft. N, 330 ft. W of NE cor. of Shell's Munson 41.35-ac. tract ..... Rig.

ORCHARD—FORT BEND COUNTY

Gulf Prod. Co.'s No. 36 Moore, Mark Smith Sur., 4,792 ft. S along E line from NE cor. and 325 ft. W at right angles ..... Drlg. sandy shale 3,554 ft.

FANNETT—JEFFERSON COUNTY

Gulf Prod. Co.'s No. 7 Burrell, W. H. Smith Sur., 150 ft. W of No. 6 ..... Derrick.

Gulf Prod. Co.'s No. 2-A Junker, W. A. Smith Sur., 100 ft. from N line, 320 ft. from E line of lease ..... Drlg. shale and lime 2,622 ft.

HANKAMER—LIBERTY COUNTY

Gulf Prod. Co.'s No. 3 Crowe & Jacobs, 1,700 ft. E, 1,050 ft. N of SW cor. of H.&T.C. Sur. No. 21 ..... Rig.

HOCKLEY—HARRIS COUNTY

John Deering's No. 4 Warren, T. A. Scully Sur., 350 ft. SW of Texas Co.'s No. 2 Warren ..... Drlg. gumbo 635 ft.

PORT NECHES—ORANGE COUNTY

The Texas Co.'s No. 1 Orange Nat. Bank, 150 ft. out of NW cor of lease, Jacob Beaumont Sur. ..... T.D. 4,799 ft; cmtd. one string 14 ft. of 9-in. screen and csg.; drilled plug and swabbed some fluid for 2 hrs.; sanded.

GRETA—REFUGIO COUNTY

Alamo Oil Co.'s No. 2 O'Brien, E. H. Winfield Sur., 536 ft. S of N line in center E and W of 50-ac. tract ..... Preparing to set screen 4,403 ft.

Atkins & O'Neil's No. 1 O'Brien, 950 ft. N of S line of J. T. McGrew Sur., 750 ft. W of R.R. ..... Drlg. sticky shale 5,590 ft.

Atlantic Oil Prod. Co.'s No. 1 O'Brien, E. H. Winfield Sur., Blk. 5, 466 ft. from S line in center of block E and W ..... Rig.

Blanco Oil Co.'s No. 1-B J. M. O'Brien, E. H. Winfield Sur., 330 ft. out of NE cor. of 50.86-ac. tract ..... Drlg. shale 4,569 ft.

Blanco Oil Co.'s No. 2-B J. M. O'Brien, E. H. Winfield Sur., 466 ft. out of SE cor. 50 acres ..... Rig.

Blanco Oil Co.'s No. 1-A J. J. O'Brien, N. C. Crunk Sur., 150 ft. from N and W lines of 107-ac. lease... T.D. 4,359 ft; cmtd. 7-in. csg. 4,-348 ft.

Blanco Oil Co.'s No. 2-A J. J. O'Brien, N. C. Crunk Sur., 600 ft. SW of No. 1-A ..... Drlg. shale 698 ft.

Circle W Oil Co.'s No. 1 O'Brien, E. H. Winfield Sur., 463 ft. from S line of survey, 466 ft. from E line of 112-ac. tract ..... Cmtd. 13-in. csg. 351 ft.

Dash Prod. Co.'s No. 1 J. M. O'Brien, N. S. Crunk Sur., 150 ft. out of most easterly cor. of 50-ac. tract.. Set 60 ft. of 5-in. screen 4,388 ft; comp. 37 bbls. per hr.; 3/16 and ¼-in. chokes; tubing pressure 1,350 lbs.; csg. pressure 1,600 lbs.

Greta Oil Corp.'s No. 3 O'Brien, E. H. Winfield Sur., 150 ft. out of SW cor. of tract ..... Cmtd. 15-in. O.D. csg. 900 ft.; T.D. 1,219 ft.

Heyser & Heard's No. 1 O'Brien, E. H. Winfield Sur., 320 ft. out of SW cor. of 50-ac. tract ..... Drlg. shale 4,075 ft.

Edwin M. Jones' No. 1 O'Brien, E. H. Winfield Sur., Blk. 4, 466 ft. from S line in center E and W..... Drlg. shale 3,076 ft.

Edwin M. Jones' No. 2 O'Brien, E. H. Winfield Sur., Blk. 4, 466 ft. from N line in center E and W ..... Derrick.

Nesral Oil Co.'s No. 1-A Wilson Heard, M. J. Ximines Sur., 320 ft. out of NE cor. lease ..... Cmtd. 9⅝-in. csg. 1,300 ft.

Nesral Oil Co.'s No. 1 Ira Heard, M. J. Ximines Sur., 320 ft. out of NW cor. of 25-ac. tract ..... Cmtd. surface csg. 258 ft.

Smith & Flobott's No. 1 O'Brien, E. H. Winfield Sur., 150 ft. out of SW cor. ..... Cmtd. csg. 1,300 ft.

Southwest Pet. Corp.'s No. 1-B O'Brien, N. S. Crunk Sur. ..... Coring oil sand 4,395 ft.

Vidauri Oil Co.'s No. 1 Welder, 330 ft. S of N line of James T. McGrew Sur., and 700 ft. W of R.R. .... Standing 5,200 ft.

SOUTH LOUISIANA FIELDS

ACADIA PARISH

Massert et al's No. 1 Marsh, 4,960 ft. S, 470 ft. E of NW cor. Sec. 44-9s-1e ..... No report.

ASSUMPTION PARISH

Barnadall Oil Co.'s No. 1 Williams, 320 ft. out of NE cor. Sec. 38-14s-14e ..... T.D. 5,608 ft; cmtd. 8¼-in. csg.

CALCASIEU PARISH

Quintana Oil Co.'s No. 1 Nelson, 1,515 ft. N, 85 ft. W of SW cor. Sec. 32-10s-9w ..... Drlg. shale 6,400 ft.

Union Sulphur Co.'s No. 1 Stout, 1,337 ft. N, 1,167 ft. W of SE cor. Sec. 36-8s-8w ..... Drlg. rock 6,675 ft.

CAMERON MEADOWS—CAMERON PARISH

Burton-Sutton Oil Co.'s No. 1 School Land, 500 ft. W and 20 ft. N of SE cor. Sec. 16-14s-13w ..... S.D. for fuel 5,563 ft.

DARROW—ASCENSION PARISH

Rio Bravo Oil Co.'s No. 1 Community, 200 ft. N line, 1,500 ft. E at right angles from SW cor. Sec. 15-10s-2e ..... Drlg. hard sand 4,554 ft.

GUEYDAN—VERMILLION PARISH

Pure Oil Co.'s No. 4 Alliance Trust Co., 578 ft. from N line and 1,931 ft. from W line of Sec. 34-11s-1w.. Cmtd. one string 105 ft. of 7-in. screen and 7-in. csg. to top; T.D. 3,585 ft.; comp. 575 bbls.; 7/16-in. choke; tubing pressure 130 lbs.; csg. pressure 800 lbs.

Pure Oil Co.'s No. 5 Alliance Trust Co., 525 ft. from N line, 580 ft. from W line of Sec. 34-11s-1w ..... Twisted off 3,931 ft; plugged to 3,850 ft.; drlg. sidetracked hole 3,948 ft.

Pure Oil Co.'s No. 4 Mulvey, 1,721 ft. from N line, 2,515 ft. from W line of Sec. 34-11s-1w ..... Drlg. sticky shale 2,490 ft.

LOCKPORT—CALCASIEU PARISH

Magnolia Pet. Co.'s No. 8 State-Bayou D'Inde, 865 ft. E, 570 ft. N of SW cor. NE Sec. 8-10s-9w ..... Trying to set screen 6,551 ft.

Magnolia Pet. Co.'s No. 4-A Watkins fee, 635 ft. E, 200 ft. N of SW cor. NW NE Sec. 9-10s-9w ..... Bldg. road to location.

Union Sulphur Co.'s No. 5 Martha Moss, Sec. 8-10s-9w... No report.

BLACK BAYOU—CAMERON PARISH

Shell Pet. Corp.'s No. 15 Watkins, 1,890 ft. from N line and 680 ft. from E line of Sec. 18-12s-12w ..... T.D. 4,711 ft; to P.B.

HACKBERRY—CAMERON PARISH

Gulf Ref. Co.'s No. 12 Irwin, 965 ft. N, 518 ft. E of SW cor. Sec. 44-12s-9w ..... No report.

Wilfred Lahey's No. 1 Aroux, center 2-ac. tract, Sec. 36-12s-10w ..... S.D. 2,610 ft.

Pop Oil Co.'s No. 1 Yount Lee, 3,996 ft. W and 100 ft. N of SE cor. Sec. 19-12s-10w ..... S.D. 2,627 ft.

Union Sulphur Co.'s No. 7 Gulf Land-Humble lease, 1,010 ft. N, 661 ft. E of SW cor. Sec. 12-12s-10w.... Drlg. sand and shale 2,020 ft.

IOWA—CALCASIEU AND JEFF DAVIS PARISHES

Magnolia Pet. Co.'s No. 1 Bowman, 330 ft. out of NE cor. S½ NW Sec. 13-9s-7w ..... Abd. 7,590 ft.

Magnolia Pet. Co.'s No. 4 Waite, Sec. 12-9s-7w, 330 ft. from E line, 660 ft. S of No. 3 ..... Drlg. shale 5,325 ft.

Magnolia Pet. Co.'s No. 2 Willett, 990 ft. N, 330 ft. E of SW cor. NW Sec. 7-9s-6w ..... Drlg. sandy shale 2,023 ft.

Shell Pet. Corp.'s No. 4 Hoyd, 2,122 ft. W, 1,310 ft. S of NE cor. Sec. 13-9s-7w ..... Blowing wild; T.D. 4,929 ft.

Shell Pet. Corp.'s No. 2 Stafford, 330 ft. from W line and 265 ft. from S line of NW Sec. 18-9s-6w ..... Drlg. sand 5,998 ft.

Shell Pet. Corp.'s No. 1 Tuten, 265 ft. S, 330 ft. W of NE cor. SW Sec. 13-9s-7w ..... Temp. S.D. 1,537 ft.

JEFFERSON DAVIS PARISH

Humble O. & R. Co.'s No. 2 Devilbiss, 1,850 ft. S, 250 ft. W of NE cor. Sec. 14-9s-4w ..... T.D. 7,543 ft; reaming.

JENNINGS—ACADIA PARISH

Yount Lee Oil Co.'s No. 13 Houssiere-Latrielle, Sec. 47-9s-3w, 300 ft. E of No. 12 ..... Drlg. shale 5,225 ft.

STARKS—CALCASIEU PARISH

Union Sulphur Co.'s No. 2 Industrial, 1,245 ft. N, 320 ft. E of SW cor. Sec. 20-9s-12w ..... Drlg. shale 4,475 ft.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 723 fee (W.O.), 1,179 ft. N, 640 ft. W of SE cor. SW NW Sec. 29-9s-10w ..... Drlg. sand and shale 3,500 ft.

Union Sulphur Co.'s No. 783 fee, Sec. 29-9s-10w ..... Salt 5,117-5,761 ft.; S.D.

Union Sulphur Co.'s No. 785 fee, 836 ft. N, 703 ft. E of center of Sec. 29-9s-10w ..... Drlg. shale 3,030 ft.

ST. MARTIN PARISH

Standard Oil Co. of Kansas' No. 1 E. B. Hopkins, Sec. 23-10s-4e ..... Drlg. shale 5,100 ft.

TERREBONNE PARISH

Sun Oil Co.'s No. 1 State-Taylor Bayou, 3,216 ft. S, 2,790 ft. E of NW cor. Sec. 22-21s-14e ..... Drlg. shale 4,155 ft.

The Texas Co.'s No. 8 State-Caillou Island, 1,950 ft. S, 2,770 ft. E of NW cor. Sec. 20-23s-20e ..... Comp. 2,290 bbls. P.L. oil; ½-in. choke, 5,981 ft.

The Texas Co.'s No. 3 State-Dog Lake, 4,067 ft. W, 1,377 ft. N of SE cor. Sec. 31-21s-16e ..... Drlg. shale 5,500 ft.

The Texas Co.'s No. 1 State-Four Isle, 1,800 ft. N, 1,-700 ft. W of SE cor. Sec. 22-21s-14e ..... Drlg. shale 5,960 ft.

Texas Co.'s No. 9 State-Lake Pelto, 4,066 ft. N, 491 ft. E of SW cor. Sec. 9-23s-18e ..... Drlg. 1,200 ft.

TEXAS

MISCELLANEOUS WILDCATS

AUSTIN COUNTY

Turnbull et al's No. 1 Watson, Stephen F. Austin Sur. No. 6, 150 ft. out of SE cor. of 115.6-ac. tract ..... Cmtd. 10-in. csg. 750 ft.

BRAZORIA COUNTY

E. A. Anderson et al's No. 1 Reynold, Johnson, Walker & Borden League, 5,502 ft. from W line, 850 ft. from W line of 122-ac. lease ..... S.D. 3,005 ft.

Danciger O. & R. Co.'s No. 2 Hunt, 6,550 ft. from E line, 5,550 ft. from S line of W. Carson Sur. ..... S.D. 7,724 ft.

COLORADO COUNTY

Humble O. & R. Co.'s No. 1-B O. M. Powell, 1,399 ft. from S line, 467 ft. from W line of Sec. 45, I.&G. N. Sur. ..... Drlg. shale 5,730 ft.

McCullouch Oil Co.'s No. 1 Kansteiner, Leiander Beason Sur., 300 ft. out of NE cor. of tract ..... Dry and abd. 4,702 ft.

Plymouth Oil Co.'s No. 1 Broussard, 2,200 ft. N and 426 ft. W of SW cor. Sec. 47, I.&G.N. Sur. ..... Rig.

Weimar Oil Co.'s No. 1 H. T. Brandt, F. Pettus Sur., 250 ft. from N line, 250 ft. from E line of tract .... Drlg. shale 5,428 ft.

Weimar Oil Co.'s No. 1 Miller ranch, approx. center H.&T.B. Sur. No. 9 ..... Derrick.

FORT BEND COUNTY

A. N. Phillips et al's No. 1 Grigor, 2,150 varas from E line, 1,550 varas from N line of J. S. O'Connor Sur. ..... Spudded.

Fresno Oil Corp.'s No. 1 M. T. Wood, T. Gleason Sur., center of 10-ac. tract (Blk. 474) ..... Drlg. shale 4,449 ft.

GRIMES COUNTY

Cambrian Oil Co.'s No. 1 W. V. Sangster, John Moore Sur., 300 ft. out of most westerly NW cor. of 218-ac. tract ..... Derrick.

Foster et al's No. 1 Quinn, 7,100 ft. from W line, 3,900 ft. from N line of S. F. Austin Sur. ..... Derrick.

Petroleum Southwest Co.'s No. 1 Greer, Pat O'Connor Sur., 300 ft. from W line, 400 ft. from N line of 150-ac. tract ..... Drlg. shale 3,275 ft.

HARRIS COUNTY

Cockburn Oil Corp.'s No. 1 C. Marcus, Wm. Hardin Sur., 1,500 ft. S along E line of 55-ac. tract from Buffalo Bayou and 300 ft. W at right angles ..... Drlg. sand and clay 810 ft.

Gohlson & Parson's No. 1 W. E. Freeman, 330 ft. SE cor. Sec. 57, Blk. 2, H.&T.C.R.R. Sur. ..... Drlg. shale 5,219 ft.

Hamill Drlg. Co.'s No. 1 Clara W. Walker (35 acres), Chas. Sage, 250 ft. W of E line, 660 ft. S of south bank of Buffalo Bayou ..... Drlg. hard lime 4,102 ft.

Hamilton et al's No. 1 Hargroves, W. C. Ry. Sur. No. 10, Blk. 1; 1,750 ft. from E line, 645 ft. N line .... S.D. 4,610 ft.

H. B. Jordan's No. 1 Cochran, J. L. Jordan Sur., 1,950 ft. S line, 1,930 ft. E line ..... Drlg. sticky shale 2,046 ft.

Jack Schultz et al's No. 1 Woodburn, 450 ft. NW of center of August Whitlock Sur. ..... Abd. 5,703 ft.

JACKSON COUNTY

Continental Oil Co.'s No. 1 Vincek, V. Garcia Sur., 1,-300 ft. W, 300 ft. N of SE cor. of Lot 17, Bennett Subd. ..... Moving in.

The Texas Co.'s No. 1 Mitchell, S. F. Austin League, 450 ft. W, 450 ft. S of NE cor. of 63-ac. tract, Lot 38, Clement Subd. ..... Drlg. sticky shale 5,944 ft.

JEFFERSON COUNTY

Sun Oil Co.'s No. 1 Paggi, 990 ft. W, 1,610 ft. N of SE cor. of T.&N.O. Sur. No. 32 ..... Drlg. sand 4,279 ft.

LIBERTY COUNTY

J. K. Seale, tr.'s No. 1 T. W. Finley, A. B. Hardin Sur., 330 ft. out of SW cor. of 25-ac. tract ..... Derrick.

Yount Lee Oil Co.'s No. 1 E. W. Boyt, H.&T.C. Sur., Sec. 17, 300 ft. from S line, 2,440 ft. from E line of section ..... S.D. for high wtr. 9,509 ft.

MATAGORDA COUNTY

Continental Oil Co.'s No. 1 Baker, 400 ft. out of SW cor. Lot 17, Robbins & Middle Subd., J. W. Criswell Sur. ..... Drlg. shale 4,955 ft.

United North & South Dev. Co.'s No. 1 Unit 6 (No. 2 Stoddard), 25 ft. each way out of NW cor. of Lot 19, Buckeye Townsite ..... Shale and lime 7,780 ft; cmtd. 7-in. csg. 7,685 ft.

United North & South Dev. Co.'s No. 1 Unit 14 (No. 1 Dr. Plotner), 1,310 ft. SE of No. 1 Stoddard and 136 ft. W of right of way of Collegeport branch of St. L.&B.M.R.R., Buckeye ..... Preparing to deepen 7,862 ft.

United North & South Dev. Co.'s No. 1 Unit 25, 1,335 ft. S, 1,000 ft. E of No. 1 Unit 6 ..... Set 111 ft. of 5-in. screen 7,870 ft.

MONTGOMERY COUNTY

Fostoria Oil Co.'s No. 1 Foster Lbr. Co., 1,180 varas W, 627 varas N of SE cor. H.T.&B. Sur. No. 2 ..... Dry and abd. 5,580 ft.

Showers & Moncrief's No. 1 Rohlf, 694 ft. from S line, 3,525 ft. from W line of Daniel Garrett Sur. (Abst. 324) ..... Tested S.W. 5,521 ft; abd.

POLK COUNTY

C. E. Stewart's No. 1 Stephenson, E. Stevenson Sur. (Abst. 761), 1,632 ft. from N line, 920 ft. from W line of 217 acres ..... Rig.

REFUGIO COUNTY

Humble O. & R. Co.'s No. 7 O'Connor, F. Rios Sur., 12,782 ft. from S line, 1,852 ft. from E line ..... Tested S.W. 3,129 ft; abd.

SAN JACINTO COUNTY

Piedmont Oil Co.'s No. 1 Foster Lbr. Co., 500 ft. out of NW cor. of G. Taylor Sur. ..... Derrick.

VICTORIA COUNTY

Gulf Prod. Co.'s No. 4 Keeran, Martin DeLeon Sur., 3,320 ft. N 41 deg. 43 min. W, parallel to NE line of lease from No. 1 ..... D.S. test 4,800-25 ft.; showed 4 fourbles S.W.; drlg. deeper.

The Texas Co.'s No. 6-A McFaddin, 5,600 ft. from NE line, 250 ft. from SE line of A. J. Gray ..... Gas sand 3,039-49 ft.; pumping wtr. and mud into sand to kill pressure.

The Texas Co.'s No. 7 McFaddin, 4,600 ft. S 15 deg. W, 450 ft. N 75 deg. W at right angles from the NE cor. of the A. J. Gray Sur. ..... T.D. 1,176 ft; blowing gas and mud.

WALLER COUNTY

Franklin et al's No. 1 A. C. Blumberg, John Baker Sur., 466 ft. out of NE cor. of most northerly 100-ac. tract ..... Derrick.

Hobson & Moore's No. 1 Petera, Justo Liendo Sur., 590 ft. W of creek, 1,144 ft. N of S cor. ..... No report.

Texas Seaboard Oil Co.'s No. 1 B. Schwartz, Isaac Best Sur., 1,050 ft. from S line, 1,100 ft. from E line of 800-ac. tract ..... Spudded.

WASHINGTON COUNTY

Clark & Cowden's No. 1 F. A. Ammons, S. Woodward Sur., 16,500 ft. from N line, 775 ft. from E line of survey ..... Derrick.

Strake Pet., Inc.'s No. 1 Henry Wehmeyer, M. Byrd Sur., 3,000 ft. from W line, 500 ft. from N line of 599.50-ac. tract ..... Spudded.

WHARTON COUNTY

Nabers et al's No. 1 Lusker, 210 ft. out of SE cor. of N½ SW Sec. 58, E.T.R.R. Sur. ..... R.U. to deepen 5,026 ft.

Pure Oil Co.'s No. 1 Stewart, 2,419 ft. NW, 1,650 ft. NE of S cor. of Sec. 35, Morris & Cummings Sur. ..... T.D. 8,015 ft; P.B. to sand at 5,-963-71 ft; cmtd. 9⅝-in. csg. 5,-961 ft; drilled plug.

Pure Oil Co.'s No. 1 Chas. T. Kuntze, 2,183 ft. from NW line, 467 ft. from SW line, Sec. 27, Morris & Cummings Sur. ..... Drlg. sandy shale 5,669 ft.

Smith & McDannald and Shell Pet. Corp.'s No. 1 Ridgeway, 1,980 ft. from S, 660 ft. from W of NE cor. Sec. 8, H.&T.C. Sur. ..... Drlg. hard sand 5,432 ft.

Wildcat Operations in Southwest Texas

(Continued from Page 53)

M. L. Howard's No. 1 James Watson, 500 ft. from W line, 2,000 ft. from S line, Sec. 16, B. Martinez Sur., 12 miles S from San Antonio ..... T.D. 2,535 ft; trying to put it on the pump.

C. J. LeCompte's No. 3 R. Diaz, 150 ft. from S and E lines of 30-ac. tract, Diaz farm lots, Nos. 1 and 2.. T.D. 1,410 ft.; S.D.

C. J. LeCompte's No. 4 R. Diaz, 324 ft. NE of No. 1 .. T.D. 320 ft.; S.D.

Motes-Campbell's No. 2 Pruitt, 300 ft. N of No. 1 on 187-ac. tract, McCullough County Sur., Blk. 4,299.... T.D. 1,848 ft.; abd.; sulphur wtr.

Fred Perrenot's No. 1 Ruiz, SE cor. of 82-ac. tract in F. Rowland (Rolen) Sur. No. 48 ..... Rigging up to go 3,000 ft.

H. A. Pagenkopf's No. 1 G. A. Goeth, 500 ft. from SE line, 600 ft. from SW line which is San Antonio River, Juan Montes Sur. ..... T.D. 925 ft.; drlg.

Roe & Day's No. 2 City Nat'l. Bank, 150 ft. from N and W lines of tract in I. Perez Sur. No. 15 ..... Spudded in.

O. L. Ray's No. 1 Thos. Dillon, 3,500 feet from NW line, 1,750 ft. from most southerly SW line of de Luna grant in southern part of county ..... T.D. 650 ft; standing.

J. Morgan Russell's No. 3 Brotze, 200 ft. W of No. 1, in Cordenas Sur. ..... T.D. 340 ft.; standing.

C. A. Smith's No. 1 Henry Lamb, 750 ft. from N and E lines of Lamb farm, in de la Garza grant ..... Spudded in and waiting for heavier rig.

F. E. Tegler's No. 1 Brackenridge, 578 ft. from S line, 2,284 ft. from W line of tract in Maria Gertrudis de Alanis Sur. ..... T.D. 1,060 ft; drlg.

Tipton's No. 1 Gembler, 514 ft. from W line, 616 ft. from N line of 120-ac. tract in M. Gotari Sur. ..... Spudded in.

BLANCO COUNTY

Blanco Development Co.'s (McGee) No. 1 A. J. Dittmar, 1,320 ft. from S line, 150 ft. from W line of George Evans Sur. No. 53, 4 miles NW of Johnson City ..... T.D. 615 ft; drlg. shale.

Isham et al's No. 1 Lester ranch, 200 varas from N and E lines of Antonio Bandrand Sur., 8 miles NE from Johnson City ..... T.D. 100 ft; standing.

CALDWELL COUNTY

Judge R. L. Batts' No. 2 Roebuck, 2,400 ft. from NE line, 1,200 ft. from SE line of tract in Arthur Swift Sur. ..... T.D. 1,755 ft; drlg. shale.

Cargill et al's No. 1 Brown, 1,600 ft. from E line, 330 ft. from S line of C. E. Brown 112-ac. tract, Dillard Cooper Sur. ..... T.D. 2,240 ft.; standing.

R. L. Hope and Joe Cole's No. 1 Mike August, 150 ft. from NE line, 165 ft. from NW line of tract ..... T.D. 1,875 ft; putting in second boiler.

F. L. Thomson's No. 1 W. M. Mercer, 1,062 varas from SE, 1,175 varas from SW line of Jas. Berry Sur. ... Fishing for slip.

DE WITT COUNTY

L. G. Wade's No. 1 fee, 6 mi. S from Yoakum, 520 ft. from NW line, 160 ft. from SW line of 25-ac. tract in Lavina Dunbar Sur. ..... T.D. 2,402 ft; S.D.

DUVAL COUNTY

Clark & Miller's No. 1 R. Lopez, 150 ft. from N line, 330 ft. from W line of Sur. 141, S. C. I. Co., 8 miles SW from San Diego ..... T.D. 1,890 ft; S.D.

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M. J. Coffey's No. 1 Parr, 591 ft. from W line, 270 ft. from N of NW cor. of Sec. 2, located in Sur. 27 ..... T.D. 1,710 ft; D.S. stuck.

T. J. Conway and C. A. Campbell's No. 1 W. K. Hoffman, 300 ft. from NW line, 1,650 ft. from NE line of Sur. No. 114 ..... T.D. 900 ft.; drlg.

DeSoto Oil Co.'s No. 2 Wood-Welder, 660 ft. E of No. 1 (950 ft. from N line, 2,640 ft. from W line of Sur. No. 211 ..... T.D. 1,410 ft.; drlg.

Huff et al's No. 1 A. Roach 485 ft. from E line, 45 ft. from S line of Blk. 7, Sur. No. 457 ..... Spudded and S.D.

G. G. Mortimer's No. 1 Peal, 330 ft. from S and W lines of Sur. No. 752 ..... T.D. 2,411 ft.; abd.

William B. Stewart's No. 3 Duval County Ranch Co., 300 ft. from E line, 320 ft. from W line of S half of SE, Sur. 363 ..... T.D. 2,157 ft.; drlg.

FRIO COUNTY

Amerada Pet. Corp.'s No. 1 Frank Doering, 34 ft. from W line, 1,700 ft. from S line of Tract No. 7 in Maria Louisa Carranza Sur. No. 307 ..... Drlg. wtr. well.

J. E. Greenlee's No. 2 Burns, 150 ft. from W line, 1,800 ft. from S line of SE of 160-ac. tract, Castro Sur. No. 123 ..... T.D. 2,300 ft.; standing.

GILLESPIE COUNTY

Powers et al's (Nixon-Dore) No. 1 Andrew Lindig, 18 mi. E of Fredericksburg ..... T.D. 730 ft; drlg. limey shale.

GOLIAD COUNTY

Gillette Oil Co.'s No. 1 Lackey & Weldon, 1,730 ft. from NE line, 2,700 ft. from SE line of 1,000-ac. tract, Navarro Gomez Sur. ..... T.D. 1,200 ft.; drlg.

GUADALUPE COUNTY

Clint Lanier's No. 1 L. D. Hill, 450 ft. from NW line, 1,450 ft. from NE line of George Allen Sur. ..... T.D. 200 ft.; S.D.

J. A. Harper's No. 1 Rosenbrook, 911 ft. from NE line, 150 ft. from NW line of tract in Vincente Duran Sur. No. 4 ..... T.D. 756 ft; setting csg.

W. J. Walton's No. 1 M. Hoffman, 750 ft. from E line, 150 ft. from S line of tract in Green Dewitt Sur. .... T.D. 2,677 ft; abd.; depth corrected; trace of oil in sulphur wtr.

HIDALGO COUNTY

Carl & Johnston's No. 1 Doughty, 187 ft. from S and E lines of Lot 11, Blk. 5 of Subd. of Indios Ranch Sur. in N. Hidalgo ..... T.D. 3,009 ft.; drlg.

Maxwell & Young's No. 1 King, 175 ft. from N and E lines of Lot 3, Blk. 16, Alamo tract ..... T.D. 125 ft.; resumed drlg.

JIM HOGG COUNTY

Cole Pet. Co.'s No. 1 Vela and Pena Bros., 330 ft. from W line and on line between Blks. 80 and 81, White Subd. of Share 2, Sur. 535, of El Peyote grant ..... Rigged up.

D. C. DeWitt's No. 1 A. G. Lopez, 3,475 ft. from W line, 425 ft. from N line of Sur. No. 106 ..... T.D. 1,650 ft; standing.

R. F. Forse's No. 1 Holbien, 150 ft. from N and W lines of Blk. 54, Sec. 9 of Holbien Sur. of Share 3 of Las Animas grant ..... T.D. 3,120 ft; standing.

Seaton A. Barnes, Jr.'s No. 1 R. Holbien, 330 ft. from W line, 340 ft. from S line, of Blk. 54, share 3, Los Animas tract ..... T.D. 2,400 ft.; abd.

Shankle et al's No. 1 Thompson, Blk. 19, Share 2, Las Animas grant ..... T.D. 2,514 ft; drlg.

KARNES COUNTY

Accumulative Royalty Co.'s No. 1 Rudd, 6 mi. S from Karnes City ..... T.D. 1,108 ft; drlg.

Karnes Co. Dev. Co.'s No. 1 S. Saige, 150 ft. E of C of W line of Wm. Pate Sur. ..... T.D. 960 ft; drlg.

John S. Pickett's No. 1 Saige, 150 ft. from W line, 750 ft. from N line of John Pate Sur., 2 mi. N from Karnes City ..... T.D. 100 ft; drlg.

KENDALL COUNTY

E. W. Martin's No. 1 Houston, in F. Wright Sur. ..... T.D. 800 ft.; drlg.

KERR COUNTY

J. E. Anderson's No. 1 J. D. Witt, 1,320 ft. from N line, 1,320 ft. from W line of Sec. 1,923, in Hamilton Sur., 4 miles S of Center Point ..... T.D. 1,520 ft; drlg.

W. E. Clark's No. 1 Love, 660 ft. from N and W lines of Mrs. Cassandra Winn Sur. No. 1,759 ..... Rigging up.

Evans & Gant's No. 1 Love, 660 ft. S of S line of Sur. 1,597, 1,320 ft. from W line of Sur. 1,594 ..... T.D. 4,060 ft; R.U. to pull csg. to test at 3,391 ft; if it fails will be carried to Ordovician.

LA SALLE COUNTY

C. B. Bunte's No. 1 Mrs. T. A. Coleman, CNL NE Sec. 68, Poitevant Sur. ..... T.D. 3,508 ft.; contract depth; S.D.

W. H. Wallace's No. 1 H. C. Yeager, 150 ft. from S and E lines of Sur. No. 95 ..... T.D. 1,375 ft.; abd.

LIVE OAK COUNTY

Coquat, O'Neill & Phillips' No. 3 Sanger, 2,930 ft. from SW line, 330 ft. from SE line of Sur. No. 350 ..... T.D. 350 ft; drlg.

Loma Oil Co.'s No. 1 A. J. Turner, 4,000 ft. from SW and 160 ft. from SE line of 660-ac. tract in Hays Sur. 2 mi. NE from Griffith well ..... T.D. 100 ft; drlg.

R. P. Whitfield's No. 1 Terrell, SW cor. of 2,500-ac. tract in David O'Boyle Sur., 5 mi. NW from Three Rivers ..... T.D. 665 ft; S.D.; depth previously reported in error.

MAVERICK COUNTY

Wright & Stroman's No. 1 DeBona, SE cor. of No. 1 .... T.D. 735 ft.; showing oil; to test.

McMULLEN COUNTY

Darby Oil Co.'s No. 1 Sling, 150 ft. from S and E lines of NE of B.S.&F. Sur. No. 111 ..... T.D. 2,925 ft.; drlg.

John V. Edwards' No. 1 J. T. Brown, 150 ft. from river, 150 ft. from NW cor. of Brown tract, E from Callihan ..... Drlg. 700 ft.

French Oil Corp.'s No. 1 Two Rivers Ranch ..... Moving in.

C. R. Pope, Inc.'s No. 1 A. C. Miles, 300 ft. to E line, 2,875 ft. to S line, Sur. 149 ..... T.D. 2,165 ft; no report.

Shumway et al's No. 1 Wulf, Sur. 4 miles SE from No. 2 Shiner, 1,730 ft. from S line, 167 ft. from W line of Steinhardt Sur. No. 190 ..... T.D. 1,910 ft; drlg.

S. R. & C. Oil Corp.'s No. 1 Reeves, 1,650 ft. from S line, 330 ft. from E line of Francis Smith, No. 4 Sur. ..... T.D. 777 ft.; drlg.

R. P. Whitfield's No. 1 Jacob, 1,325 ft. from S line, 355 ft. from E line of NE Sec. 9, of Jacob ranch, 1 mi. NW from Jacob Pool ..... T.D. 950 ft.; abd.

MILAM COUNTY

Ed Clark et al's No. 1 Thomas Graves, 250 ft. from SW and NW lines of Jackson Hall Sur. ..... T.D. 802 ft; standing.

Clark et al's No. 1 Hoppe, 450 ft. from NE line and 450 ft. from SE line of E. Hoppe 60-ac. tract in Juan Jose Acosta Sur. ..... T.D. 520 ft.; standing.

REFUGIO COUNTY

Blanco Creek Oil Co.'s No. 1 Denmann, 150 ft. S of N line, 150 ft. E of W line of Sec. 16, Bonnieview Subd. ..... T.D. 4,733 ft; resumed work with new leases; washing down at 1,800 ft.

SAN PATRICIO COUNTY

George W. Scruggs' No. 1 Collins, 1,040 ft. from NE line, 700 ft. from SE line of Blk. 36, E. J. McGlein Sur. ..... T.D. 2,756 ft; changing to heavier rig.

STARR COUNTY

B.&B. Oil Co.'s No. 1 Crown Brick & Tile Co., 1,800 ft. S of State Highway No. 4 and 500 ft. from W line of Porcion 87, near La Puerta ..... T.D. 4,560 ft; fishing.

W. P. Chancellor's No. 1 A. Guerra, 24,000 ft. from S line, 2,600 ft. from E line of Share No. 6 of San Jose Grant Sur., NE cor. of county ..... T.D. 1,950 ft; drlg.

F. R. Cooper's No. 1 J. M. Martinez, 150 ft. to S and E lines of A.B.&M. Sur. No. 135 ..... T.D. 3,040 ft; drlg.

Great Plains Oil Co.'s No. 1 Sanchez, 660 ft. from W line, 330 ft. from S line of SE NW of Sur. No. 344 ... T.D. 2,300 ft.; standing.

Jeffries and Lambeth Drlg. Co.'s No. 1 Starr County Cattle Co., 11,572 ft. from N line, 2,490 ft. from E line of Porcion 89, Sur. jurisdiction Camargo, 8 miles NE from Rio Grande City ..... T.D. 2,455 ft; D.S. test showed big volume of gas in 3 min.; set csg.; show of oil in mud; 5 ft. in sand.

Sun Oil Co.'s No. 1-B Guerra, 9,677 ft. from SE line, 3,300 ft. from SW line of Share H-14-B Sur., La Cuevitas grant ..... T.D. 3,260 ft.; abd.

Sun Oil Co.'s No. 1-C Guerra, 4,861 ft. from NW line, 660 ft. from NE line of Sur. La Secatosa grant .... T.D. 2,380 ft; comp.; P.B. to 2,-180 ft.; 40,000,000 ft. gas.

Goodwain & Yantis' No. 1 Seabury, 150 ft. from S and W lines of Sec. 107, Share No. 1, Porcion No. 107.... T.D. 2,265 ft; fishing for D.S.

TRAVIS COUNTY

Franklin et al's No. 1-A Reimers, 1,200 ft. from SE line, 1,600 ft. from most southerly SW line of Sur. No. 35 ..... T.D. 455 ft.; S.D.

Holdin's No. 1 D. V. Collins, 6,192 varas from SE line, 10,440 varas from SW line of Santiago de Valle Grant Sur. ..... T.D. 810 ft; standing.

UVALDE COUNTY

Frank A. Brown's No. 1 J. A. Milliken, 1,800 varas from W line which is Sabinal River, and 108 varas from S line of Antonio Cruz Sur. No. 383 ..... T.D. 100 ft; T.A.

Evans & Thompson's No. 1 Farris, 400 ft. from S and W lines of 535-ac. tract near center of John J. Hammond Sur. ..... T.D. 300 ft; renewing leases to correct title.

O. A. Payte's No. 1 Riddle, 180 ft. from N line, 1,050 ft. from E line of 150-ac. tract, Blk. 471, Kilgore Sur. ..... T.D. 800 ft; S.D.

O. A. Payte's No. 1 Waldrip, 160 ft. from S and W lines of G. Traute Sur. No. 471 ..... T.D. 500 ft.; S.D.

John Roberts' No. 1 Kincaid, 4 mi. N of Sabinal ..... T.D. 705 ft; drlg.

WEBB COUNTY

Danvers & Harrison's No. 1 Benavides, 2,490 ft. from E line, 2,497 ft. from S line of Sur. No. 669 ..... Spudded in.

Danvers & Harrison's No. 1 Benavides, 2,490 ft. from S and E lines of Sur. No. 669 ..... Spudded in.

Edwin M. Jones' No. 2 Callaghan, 330 ft. from S and E lines of C.C.S.D.&R.G.N.G. R.R. Sur. No. 1,211.... Rigging up.

Grey Oil Corp.'s No. 1 A. S. Billings, 2,310 ft. from N line, 330 ft. from W line of Blk. 1, C.C.S.D.&R.G. N.G. Sur. No. 13 ..... T.D. 1,290 ft; drlg.

Shankle & Roche's No. 1 W. W. Steil, 660 ft. from N and W lines of NW NW of No. 37 Sur., 11 miles N from Mirando City ..... T.D. 2,500 ft; resumed drlg.

Will Ohlhausen's No. 1 Moses Jones, 273 varas from E line, 516 varas from S line of 100-ac. tract in Sur. No. 1,640 ..... T.D. 850 ft.; standing.

Washabaugh & Roberts' No. 1 Bruni, 1,170 ft. from NE line, 150 ft. from NW line of E¼ of 160-ac. tract in Sur. 139 ..... T.D. 43 ft; set surface csg.; drlg. wtr. well.

WILLIAMSON COUNTY

R. S. Wilson's No. 1 Ritchey, 1,200 ft. from SE line, 200 ft. from NE line of F. B. Ritchey 98-ac. tract in Simon Miller Sur. ..... T.D. 1,880 ft; drlg. shale.

ZAPATA COUNTY

J. C. Charver's No. 1 Bustamente, 330 ft. from N and E lines of 24-ac. tract in Share 24 of Las Comitas grant ..... T.D. 20 ft; drlg.

Hamilton, Brower & Crow's No. 1 Slator, 2,111 ft. from SW line, 1,980 ft. from SE line of Blk. 1, Subd. of Slator ranch in J. V. Borrego grant ..... T.D. 1,069 ft; standing.

Circle W. Oil Co.'s No. 1 M. Garza est., 623 ft. from NW line and 699 ft. from SW line of Blk. 30, C. A. Douglas Subd. of Charco de la India grant ..... Rigged up; standing.

J. P. Doyle's No. 1 I. Ramires, 150 ft. from NW and SW lines of Blk. 15, Share 1, Porcion 18 ..... Spudded in.

O. W. Killam's No. 1 V. Pena, 1,350 ft. from N line, 4,790 ft. from W line of Ratones ranch, Dolores Subd., Borrego grant ..... T.D. 2,150 ft.; abd.

O. W. Killam's No. 2 A. M. Bruni, 750 ft. from SE line, 160 ft. from SW line in Blk. 6, Sur. No. 15.... Derrick.

Sarah Poppas' No. 1 Juan V. Cueller, Jr., 150 ft. from NE and SE lines of Blk. 3, Sur. 2 of Poppas Subd. of Por. 34 ..... T.D. 800 ft; drlg.

A. C. Savey et al's No. 1 Flores, 150 ft. from NW line, 206 ft. from NE line of Blk. 5, Share 1 of P. A. Richer Subd. of Porcion No. 36 ..... T.D. 2,404 ft; standing.

Stevens & Brown's No. 1 Alexandro Garcia, 660 ft. from SW line, 660 ft. from NW line of Blk. 6, Stevens & Brown Subd. of W 700 acres, Charco Redondo grant, A. Garcia tr. 16 miles SE of Zapata ..... T.D. 1,250 ft; standing.

Arthur H. Wray's No. 1 Gopher Trust Est., 300 ft. from NW line, 1,020 ft. from SW line, Blk. 14, Sur. 1, Fullerton Subd., Share 8, in J. V. Borrego Grant Sur. ..... Waiting on wtr.

ZAVALA COUNTY

Zavala O. & G. Co.'s No. 1 Gates, 1,320 ft. from N line, 1,220 ft. from E line of Hooper & Wade Sur. No. 15.. T.D. 6,054 ft; hole cleared; standing.

Southwest Texas Proven Areas

Week Ending August 5

CEDAR CREEK—BASTROP COUNTY

Company, well, farm name, section and block—	Remarks
Marts & Beavens' No. 1 Orgain, 1,500 ft. from SW line, 200 ft. from NW line of tract in Addison Litton League	Spudded in.

HILBIG POOL—BASTROP COUNTY

Humble O. & R. Co.'s No. 7 Wilhelm, 385 ft. S of CNL of 222-ac. tract in Mays Sur. ..... T.D. 2,459 ft.; comp. 60 bbls. hrly. on 1-in. choke.

NORTH DALE POOL—BASTROP COUNTY

Chiquita Oil Co.'s No. 2 M. I. Harris, 300 ft. NW of No. 1, J. Maxmilian Sur. ..... T.D. 2,175 ft.; preparing to set csg.

RIDDLE POOL—BASTROP COUNTY

Floyd Dodson's (and Muckelroy) No. 1 Duran, 45-ac., 300 ft. from NE line, 1,440 ft. from SE line of 100-ac. tract, Flynt Sur. ..... T.D. 2,424 ft.; S.D.

Marts & Beavens' No. 1-A Riddle (202-ac.) ..... T.D. 2,310 ft; running csg.

Ogden & Reed's No. 1 Talley, 150 ft. from NW line, 1,350 ft. from SW line of John Maxmilian Sur. .... T.D. 2,127 ft; treated with 3 drums acid; standing.

Ogden & Reed's No. 1-A C. L. Riddle, 1,225 varas from NE line, 288 varas from NW line of Maxmillian Sur. ..... T.D. 2,276 ft; treated with 6 drums acid; standing.

PETTUS POOL—BEE COUNTY

Mauldin's No. 4 fee, 420 ft. NE of No. 3, ¾ mile S from Pettus townsite ..... T.D. 3,847 ft.; coring for sand.

TULETA POOL—BEE COUNTY

Grisham et al's No. 1 Rapp & Hatch, 1,700 ft. from N line, 2,640 ft. from E line, Sec. 12 of Ragsley's Subd. of Uranga grant ..... T.D. 4,393 ft.; 12-hr. gauge, 220 bbls. fluid, 10% S.W. on ¾-in. choke, 43.9 gravity oil.

ECKERT POOL—BEXAR COUNTY

Gatlin Oil Co.'s No. 16 I. A. Beck, 300 ft. from NW of No. 2 Beck ..... Preparing to spud.

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THE OIL AND GAS JOURNAL

Tulsa, Oklahoma

J. F. Harrison's No. 1 F. Gembler, 150 ft. from NW line, 450 ft. from NE line of 88-ac. tract in J. Montes Sur. ..... T.D. 416 ft; standing in shale.
McDaniel & Wood's No. 1 A. C. Gembler, 150 ft. from N and W lines of 40-ac. tract, Gotari Sur. ..... Moving in.

NORTH KOHLER POOL—DUVAL COUNTY

Allen & Morris' No. 1 G. W. Sutherland, 165 ft. from N line, 165 ft. from W line, SW NE of Sur. 188... T.D. 1,700 ft; coring for Cole sand.

NORTH GOVERNMENT WELLS POOL—DUVAL COUNTY

Central Producers, Inc.'s No. 7 Tuck & Johnson, 330 ft. from S and W lines of SW SW of Sur. No. 42 ..... Rigging up.
Hester Bros.' No. 1 fee, 330 ft. from S and E lines of NE of Sur. No. 47 ..... Rigging up.
Humble O. & R. Co.'s No. 8 Hahl, 2,990 ft. from S line, 330 ft. from W line of E½ of Sur. No. 360... T.D. 2,308 ft.; comp. 50 bbls. first hr.; increased second hr.
Navarro Oil Co.'s No. 14 Hahl, 2,310 ft. from S line, 330 ft. from E line of W½ of Sur. No. 360 ..... T.D. 2,287 ft.; comp. 45 bbls. hrly.
Navarro Oil Co.'s No. 27 Hahl, 660 ft. N of No. 26 in Sur. No. 360 ..... T.D. 2,200 ft; drlg.
Navarro Oil Co.'s No. 20 Hahl, 1,650 ft. from S line, 990 ft. from E line of W½ of Sur. No. 360 ..... T.D. 2,288 ft.; comp. 100 bbls.
Navarro Oil Co.'s No. 15 Hahl, 2,970 ft. from S line, 330 ft. from E line of W½ of Sur. No. 360 ..... T.D. 2,286 ft.; comp. 4 bbls. hrly.
C. G. Porter's No. 2 Smith, 330 ft. from S and W lines of NW NE No. 46 Sur. ..... T.D. 2,319 ft; comp. 75 bbls. dly.
Reynosa Oil Co.'s No. 8 Hahl, 330 ft. from S and E lines of N½ of NE of No. 42 ..... T.D. 2,284 ft.; set csg.
Reynosa Oil Corp.'s No. 1 Duval County Ranch Co., 330 ft. from N and W lines of N½ of SW of Sur. No. 362 ..... T.D. 2,269 ft; W.O.C.
Southwest Drlg. Co.'s No. 11 Wendt, 990 ft. from N and E lines of SW SE Sur. No. 43 ..... T.D. 2,272 ft.; comp. 4 bbls. hrly.
Southwest Drlg. Co.'s No. 12 Wendt, 660 ft. N of No. 11, and 660 ft. W of No. 10, in Sur. No. 43.... T.D. 2,243 ft.; set csg.
Texas Co.'s No. 3 Johnson, 330 ft. from N line, 990 ft. from W line of S½ of NW¼ of Sur. Seago. No. 42 ..... T.D. 2,269 ft.; comp. 5 bbls. hrly.

SARNOSA POOL—DUVAL COUNTY

L. W. Capps' No. 5-A Duval Ranch Co., 806 ft. from SW line, 330 ft. from SE line of W¼ of Sur. 574.... T.D. 1,750 ft; drlg.
Sarnosa Oil Corp.'s No. 15 Well ..... Moving in rig.
Sarnosa Oil Corp.'s No. 10 Well, 1,546 ft. from NW line, 990 ft. from NE line of Sur. No. 130..... T.D. 2,594 ft.; abd.
Sarnosa Oil Co.'s No. 9 A. Well, 2,154 ft. from NW line, 330 ft. from NE line of No. 130 Sur. ..... Location T.A.
Sun Oil Co.'s No. 5 Cano, 1,141 ft. from NE line, 330 ft. from SE line of E¼ of No. 576 ..... Drilling in.

PETERS POOL—DUVAL COUNTY

R. F. Duggan's No. 1 Sutherland, 1,807 ft. from E line, 4,136 ft. from S line of Sur. No. 137 ..... T.D. 2,581 ft.; bailed to bottom; showed only a little oil; drlg. deeper.

SANDIA POOL—JIM WELLS COUNTY

Crude Oil Royalty Co.'s No. 1 Allen, 150 ft. from N and E lines of Blk. 2, Subd. of Wade ranch ..... T.D. 2,648 ft; standing.

NORTH PETTUS POOL—KARNES COUNTY

Gulf Coast Co.'s No. 6 McKinney ..... Begol Oil Co. building derrick and moving in rig.

JACOBS POOL—McMULLEN COUNTY

Longhorn Oil Co.'s No. 2-A C. T. Lark, in E. W. B. Scrugham Sur. ..... T.D. 1,045 ft.; abd.; hole lost.
Longhorn Oil Co.'s No. 3-A Lark, 450 ft. from N line, 150 ft. from W line of Blk. 14, of Subd. of Lark land in E. W. B. Scrugham Sur. ..... T.D. 200 ft.; drlg.
Kennon & Stephenson's No. 1 Lark, 150 ft. from N and W lines of Blk. 15, subd. of Lark land in E. W. B. Scrugham Sur. ..... T.D. 1,033 ft.; recmtng.; first reported as Longhorn Oil Co.'s No. 3-A.

KING POOL—NUECES COUNTY

John F. Camp's No. 1 King, 150 ft. from N and W lines of E½ of Sec. 29, of Richard King Subd. ..... T.D. 5,470 ft.; drlg.

GRETA POOL—REFUGIO COUNTY

Heyser & Heard's No. 1 J. M. O'Brien, C S½, Blk. 5.. Derrick.
Edwin M. Jones' No. 1 J. M. O'Brien, C S½ of Blk. 4, or 466 ft. from S and W lines of 50-ac. tract.. Set surface csg.
Nesral Oil Co.'s (Pearson) No. 1 Thomas O'Connor, 330 ft. SE of railroad ..... Derrick.

MATHIS POOL—SAN PATRICIO COUNTY

Leo W. Scruggs' No. 1 Collins ..... T.D. 2,756 ft.; changed to heavier rig.

LAUREL POOL—WEBB COUNTY

Magnolia Pet. Co.'s No. 1 Jose Garcia, 330 ft. from N and W lines of Blk. 9, Sur. No. 1,100 ..... T.D. 2,153 ft.; comp. 3,500,000 ft. gas.
Shankle & Newton's No. 1 S. Benavides, 330 ft. from S and E lines of Blk. 13, in No. 2,272 Sur. ..... T.D. 40 ft.; location abd.
E. A. Taegel's No. 2 Garcia-Villareal, 300 ft. from NW line, 810 ft. from SW line of SW SW of Sur. No. 720 ..... T.D. 1,980 ft; drlg.
Arthur H. Wray's No. 1 Laurel, 600 ft. from W line, 150 ft. from S line of Blk. 5, Sur. 370 ..... T.D. 1,100 ft; drlg.

MOCA POOL—WEBB COUNTY

Moca Oil Co.'s No. 5 Duval County Ranch Co., 660 ft. E of No. 1 ..... Moving in rig.
Moca Oil Co.'s No. 4 Duval County Ranch Co., 810 ft. from N line, 120 ft. from W line of Blk. 32, Share 3, Zapata County School Land ..... T.D. 1,214 ft.; P.B. to 891 ft.
S.R.C. et al's No. 2 Duval Co. Ranch Co., 330 ft. W of No. 1, 150 ft. from S line of lease, League No. 2 of Zapata County School Land Sur. ..... T.D. 882 ft.; comp. 200 bbls. dly.; flowing.
S. R. C. Oil Corp.'s No. 2 Duval County Ranch Co., 1,943 ft. from E line, 150 ft. from S line of Blk. 11, League 3, of Zapata County School Land Sur. ..T.D. 882 ft.; comp. 200 bbls. dly.; flowing.

CHAPMAN POOL—WILLIAMSON COUNTY

Deep Pay Exploration Co.'s No. 1 M. V. Lawrence, 237 ft. from W line, 86 ft. from S line of S. Miller Sur. ..... T.D. 2,056 ft; in Edwards; standing.

ESCOBAS POOL—ZAPATA COUNTY

Texas Co.'s No. 24 Measles, 2,051 ft. from SE line, 17,384 ft. from SW line of Cerrito Blanco grant.... Rigging up.
Texas Co.'s No. 21 Measles, 1,576 ft. from SE line, 18,-556 ft. from SW line of Cerrito Blanco Grant Sur. ... T.D. 1,199 ft.; comp. 50 bbls. dly.
Texas Co.'s No. 24 Measles, 2,051 ft. from SE line, 17,-884 ft. from SW line of Cerrito Blanco grant ..... T.D. 1,198 ft.; comp. 50 bbls. dly

MIRANDO VALLEY POOL—ZAPATA COUNTY

J. W. Edwards' No. 1 R. Hinnant, 150 ft. from SE lines of Blk. 8, Sur. No. 116 ..... T.D. 1,820 ft.; abd.

Wildcat Operations in Louisiana-Arkansas

(Continued from Page 52)

A. D. King, tr.'s No. 1 Roach, 641 ft. E, 375 ft. N, SW cor. SW SW Sec. 4-14-16 ..... Derrick.

CATAHOULA PARISH

George Greer et al's No. 1-B La. Cen. Lbr. Co., Sec. 2-9-6, 2,045 ft. N, 1,920 ft. W, SE cor. ..... Arranging to kill; T.D. 3,016 ft.

CLAIBORNE PARISH

United Gas Public Service Co.'s No. 1 Meadows, approximately 100 ft. S, center E½ E½ Sec. 13-21-5... S.D. 6,710 ft.

DE SOTO PARISH

Bailey Gantz et al's No. 1 Jenkins, NW cor. SE SW Sec. 35-13-12 ..... S.D.; W.O. 3,090 ft

J. H. McKenzie's (was P. B. Dyer's) No. 2 B. F. Jenkins, 330 ft. N and E, SW cor. NW SW Sec. 35-15-12..Began drlg. July 26; cmtd. 10-in. 60 ft.; fishing slip 985 ft. drlg. 1,800 ft.

Hirschfield-Bailey Interests' No. 1 Mickle, 660 ft. N and E, SW cor. SE Sec. 7-13-12 .....Rig up.

Geo. L. Pace's No. 1-B Cole, 150 ft. N and E, SW cor. SE NE Sec. 11-11-11 .....Derrick.

N. B. Porter's No. 1 J. W. Porter Est., 330 ft. N and E, SW cor. SE SE Sec. 23-12-13 .....Drlg. 624 ft.

SABINE PARISH

A. F. Allen's No. 1 G. W. Belton, NE cor. NW NW Sec. 33-9-13 .....Drlg. 380 ft.

J. F. Morrissey's No. 1 Wyatt Lbr. Co., 150 ft. S and W, NE cor. NW NW Sec. 13-4-12 .....S.D. high wtr. 902 ft.

CONVERSE DISTRICT

R. L. Gay's No. 1-B Bowman-Hicks, 330 ft. N and E, SW cor. SW NE Section 22-9-13 .....Drlg. 1,591 ft.

Lambert et al's No. 1 Edwards, 300 ft. S and E, NW cor. SW NW Sec. 29-9-13 .....D.S.test 3,045-3,328 ft; S.W. and mud; W.O.

Joe Modisette's No. 3 Frost Lbr. Industries, 330 ft. S and E, NW cor. NE SW Sec. 16-9-13 .....S.D.; W.O. 3,190 ft.

E. M. Self's No. 1 G. I. Paul, 330 ft. N and W, SE cor. NE SW Sec. 9-9-13 .....Began drlg. July 13; cmtd. 10-in. 60 ft.; S.D.

Homer Tyson's No. 1 G. W. Hough, 330 ft. S and E, NW cor. SW NW Sec. 31-9-12 ..... Derrick.

Arkansas

COLUMBIA COUNTY

C. W. Alworth et al's No. 1 W. D. King, SW cor. SE SW Sec. 16-17-20 .....Coring Arkadelphia 1,721 ft.

JEFFERSON COUNTY

J. E. Elliott's No. 1 B. V. Nevin, 440 ft. N and E, SW cor. SW NW Sec. 36-4-10 .....Derrick.

R. V. Harrell et al's No. 1 McGoughey, NW cor. Sec. 22-7-10 .....S.D. 1,550 ft.

HEMPSTEAD COUNTY

Kentucky O. & G. Co.'s No. 1 Leslie, NW cor. SW NW Sec. 21-9-26 .....Derrick.

LAFAYETTE COUNTY

Paul G. Benedum's No. 1 Hanson, 175 ft. S, 50 ft. W, C, NW Sec. 25-19-24 .....Cmtd. 12½-in. 403 ft.

Geo. W. Harper's No. 1 Reed-Bodcaw, NW cor. Sec. 16-15-22 .....Drlg. 1,857 ft.

MILLER COUNTY

Duluth-Ark. Oil Co.'s No. 2 Beck, 330 ft. S and E, NW cor. SE SW Sec. 34-15-26 .....Rig.

Claude English et al's (was Tarkington et al's) No. 1 Gibson, 1,980 ft. N, 660 ft. E, SW cor. Sec. 30-15-27..Began drlg. July 15; cmtd. 12½-in. 40 ft.

UNION COUNTY

E. R. Henderson's No. 1 Snyder, 400 ft. N, 660 ft. E, SW cor. NE SE Sec. 2-19-15 .....Drlg. 2,706 ft.

NEVADA COUNTY

Longoria et al's No. 1 Dick Gulley heirs, Sec. 2-12-20....Began drlg. July 5 and S.D.

Mississippi

JONES COUNTY

Snow-Black Pet. Co.'s No. 1 Watson, 600 ft. W, 210 ft. S, center, Sec. 24-7-13 ..... Drlg. gumbo 2,250 ft.

LAMAR COUNTY

Lamar Oil Co.'s No. 1 Scott, NE NE Sec. 18-2n-14.....Drlg. sandy shale 2,640 ft.

WALTHALL COUNTY

Mutual O. & G. Co.'s No. 1 Boyd, Sec. 24-2n-9e, SW cor. SW SE .....Derrick pattern.

WARREN COUNTY

Kistler & Stivers' No. 1 Blake est., 1,215 ft. NE Blakely Station, Sec. 15-17-5 .....Drlg. shale and shell 4,800 ft.

Louisiana-Arkansas Proven Areas

North Louisiana

CADDO—BETHANY

Company, well, farm name, section and block—	Remarks:
Tom Collins Pet. Co.'s No. 1 Gill & Lipscomb, 660 ft. N, 1,506 ft. E, SW cor. Sec. 17-16-16	Derrick.

CADDO PARISH—BLANCHARD

Nick Barbare's No. 2 P. A. Sharpe, 330 ft. S and W, NE cor. NE SE Sec. 9-18-16 .....Arranging D.S. test 2,725 ft.

Calatex O. & G. Co.'s No. 1 G. M. Agurs, Sec. 9-16-15....Began drlg. July 24; cmtd. 10-in. 266 ft; drlg. 1,125 ft.

CADDO—RODESSA

Ark. La. P. L. Co.'s No. 1 Williams & Windham, Sec. 4-22-14, 660 ft. S, 660 ft. E, NW cor. NE NW .....Drlg. lime 4,705 ft.

United Gas Public Service Co.'s No. 1 Festervan, Sec. 23-23-16, 1,980 ft. N, 1,320 ft. E, SW cor. .....S.D. lime 3,636 ft.

DE SOTO PARISH

Tom McKinney et al's No. 1 J. M. Nabors, 330 ft. N and E, SW cor. SE SE Sec. 26-12-12 ..... Rig up.

MOREHOUSE PARISH

United Gas Public Service Co.'s No. 29 Crossett Lbr. Co., 661 ft. E, 660 ft. N, SW cor. SW SW Sec. 17-22-5 .....Derrick.

United Gas Public Service Co.'s No. 30 Crossett, Sec. 25-23-4e .....Cmtd. 6⅝-in. 2,168 ft.

United Gas Public Service Co.'s No. 2 Patton, 2,375 ft. S, 2,917 ft. E, NW cor. Sec. 12-20-11 .....W.O. 2,212 ft.

OUACHITA PARISH

Century Carbon Co.'s No. 3 McGee, 220 ft. S, 4,667 ft. E, NW cor. Sec. 10-18-4 .....Derrick.

RED RIVER PARISH

E. M. Thompson's No. 1 T. J. Crichton, SW SE Sec. 17-13-10 .....Tested S.W.; S.O. 940 ft.; S.D.

SABINE PARISH—ZWOLLE

J. C. Chandler's No. 1 Rains, SW cor. NW Sec. 14-7-11..Rigging up.

Dyer et al's No. 1 McCollister, 330 ft. S and E, NW cor. SW NE Sec. 24-7-12 .....Derrick.

T. E. Kelly's No. 1 McClanahan, 1,000 ft. S, 330 ft. E, NW cor. SW NW Sec. 26-8-11 .....Began drlg. July 30; cmtd. 10-in. 41 ft.

H. C. Maulding's No. 1 DeLatin, Sec. 3-7-11.....Cmtd. 6-in. top marl 2,355 ft.

C. H. Tuttle's No. 4 Byrd, 800 ft. S, 920 ft. E, NW cor NW NW Sec. 7-7-10 .....Derrick.

C. T. Ruffin's No. 4 Lilley, 330 ft. S and E, NW cor. NW NW Sec. 8-7-11 .....Began drlg. July 26; 10-in. 40 ft; S.D. 600 ft.

Mississippi

HINDS COUNTY

Atkins & Hightower's No. 1 Woodland Hills, 400 ft. W, 427 ft. N, SE cor. NW NE Sec. 26-6-1e .....Cmt. 8-in. 770 ft; drlg. 2,150 ft.

RANKIN COUNTY

J. A. Alexander, tr.'s No. 1 Love Pet. Co., 600 ft. W, 240 ft. S, NE cor. NW NE Sec. 1-5-1e .....Drlg. sand 2,195 ft.

Muse & Muse's No. 1 Carlton, Sec. 13-5n-1e, 650 ft. E, 725 ft. N, SW cor. .....Cmtd. 6-in. 2,407 ft.

EAST TEXAS (Border Counties)

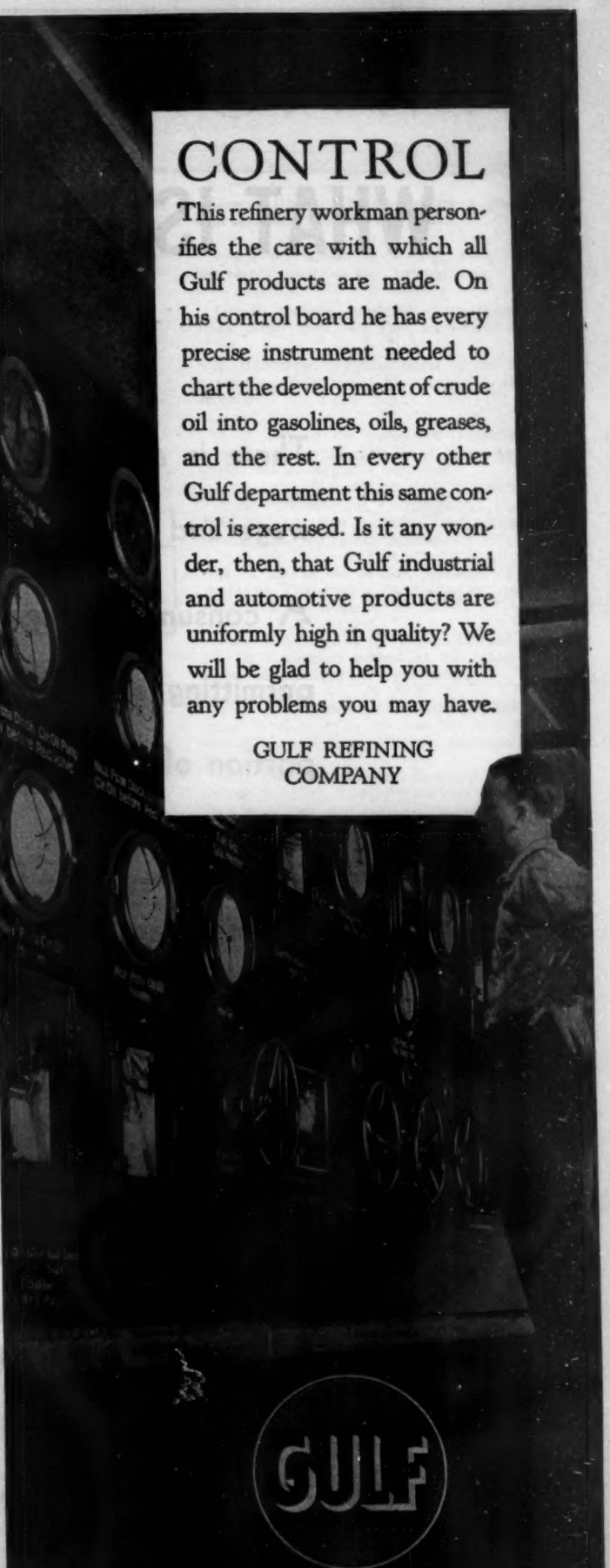
MARION COUNTY

Terry et al's No. 1 E. B. Colgin, 300 ft. N and E, SW cor. Martin Noll Sur. .....Derrick.

PANOLA COUNTY

W. H. Nichols et al's No. 1 S. W. Ray, 330 ft. S of N line, 330 ft. W of E line, W. P. Culver Sur. .....Derrick.

M. H. Robbins et al's No. 1 Alsee Williams, 165 ft. N and E, SW cor. 30-ac. tract in Winnie Mann Sur. ...Derrick.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This refinery workman personifies the care with which all Gulf products are made. On his control board he has every precise instrument needed to chart the development of crude oil into gasolines, oils, greases, and the rest. In every other Gulf department this same control is exercised. Is it any wonder, then, that Gulf industrial and automotive products are uniformly high in quality? We will be glad to help you with any problems you may have.
GULF REFINING COMPANY
GULF

WHAT IS A "LIVING WAGE"?

There is a vast difference between a living wage and a consumer's wage.

A consumer's wage has the advantage of permitting an employee to enjoy a proper portion of the product of his own hands.

PRICE CUTTING will not permit a consumer's wage.

Halliburton employees are paid consumer's wages—Halliburton customers are contributing to business recovery.

HALLIBURTON OIL WELL CEMENTING CO.

ERLE P. HALLIBURTON, President

PERSONAL PARAGRAPHS

W. W. Wolfe, of Tulsa, has recently been on a business trip to San Antonio, Tex.

* * *

M. W. Clark, purchasing agent, Muskogee Iron Works, was a business visitor in Tulsa last week.

* * *

John Kolthoff, of Wichita, Kans., has become advertising manager of Phillips Petroleum Company.

* * *

Virgil Wood, petroleum geologist of Tulsa, is spending the summer months at Santa Monica, Calif.

* * *

Dr. Norman D. Fritz Gerald, petroleum economist, is now with the Standard Statistics Company in New York City.

* * *

Tom Rush, assistant in the purchasing department of the Stanolind Oil & Gas Company, is on a vacation trip in Texas.

* * *

H. R. Leland, of the Leland Equipment Company, has returned to Tulsa from a business trip to Milwaukee and Chicago.

* * *

V. C. Fuller, purchasing agent, Gypsy Oil Company, Tulsa, and family have returned from a vacation trip to Chicago.

* * *

Thomas F. Burke, salesmanager for the Vacuum Oil Company at New York, arrived last week from Hamburg, via Boulogne and Galway.

* * *

O. E. McClatchey, purchasing agent, Barnsdall Oil Company, Tulsa, spent several days last week in Council Bluffs, Iowa, on company business.

* * *

J. P. Byrne, Kansas City, Mo., representative of the Wheeling Corrugating Company, Wheeling, W. Va., was a business visitor in Tulsa last week.

* * *

R. A. Broomfield, Jr., of the Barnsdall Oil Company, who was married recently, is expected to return to his headquarters at Los Angeles shortly.

* * *

A. D. Ryan, chief investigator for the Federal Government in the East Texas Field, spent part of last week looking over the situation in Oklahoma fields.

* * *

Robert L. Hague, president of Standing Shipping Company, accompanied by Mrs. Hague, returned to his offices at New York last week after an extended visit to Europe.

* * *

John S. Cruse, chief paleontologist, Gulf Coast division, Pure Oil Company, Houston, Tex., has resigned effective August 15, to accept a position in a similar capacity with the Amerada Petroleum Corporation, which recently established offices at Houston.

* * *

Dr. Donald C. Barton, consulting geophysicist and geologist, Houston, Tex., has returned to his home following a trip to Washington, D. C., and other points in the East. While in Washington he attended the International Geological Congress. He was accompanied by Mrs. Barton and small daughter.

* * *

W. P. Laughter, oil and gas supervisor for the Texas district south of San Antonio, has moved his headquarters for the time being from Beeville, to Victoria in order to be nearer the bulk of the activity. The Texas Railroad Commission has appointed two assistants, W. J. Halloran and M. P. Fuller.

* * *

G. B. Shea, petroleum engineer of the U. S. Bureau of Mines, formerly with headquarters at Washington, D. C., has been transferred to the petroleum field office of the bureau at San Francisco, Calif., where he will be engaged in production work having to do particularly with the California oil fields.

Marrs McLean, independent operator, Beaumont, Tex., is spending the month in Colorado.

* * *

M. Frank Yount, president of Yount Lee Oil Company, Beaumont, Tex., is in Colorado, where he is spending his summer vacation.

* * *

Robert Clark Greenwald, of the Texas Company, returned to New York last week from Rio de Janeiro.

* * *

Miss Florence W. Lundell, librarian, technical department, Tulsa Public Library, left for a month's vacation on July 22 to be spent in Detroit, Mich., Chicago and Colorado.

* * *

L. Preetzmann-Aggerholm, Haitian distributor for Tide Water Oil Company, and Manual Miranda, Venezuelan agent for the company, were recent visitors at the New York offices.

Men of the Industry

F. H. BEDFORD, JR.

Director of the specialty business of the Standard Oil Company (New Jersey) and vice president of the Standard Oil Company of Pennsylvania, a subsidiary, Frederick H. Bedford, Jr., is another of the Jersey company board members with a distinct Standard Oil background. He is a son of the late F. H. Bedford, who until his retirement in 1927 was vice president and a director of the Jersey Standard company.

F. H. Bedford, Jr., spent several months at the Bayonne and Eagle Works of the company in 1914 following his graduation from Amherst College, in order to gain a background of the company's operations, and in 1915 he went to Paris as assistant to Peter Hurll of the Bedford Petroleum Company. In 1916, after extensive traveling abroad, he returned to New York to assume charge of export sales of "Nujol."

There followed, with interruption by service in the A.E.F., positions as manager of the "Nujol" department and later of the lubricating department, in which Mr. Bedford was closely associated with his father.

In the fall of 1927 Mr. Bedford was elected a director of the Standard Oil Company (New Jersey) and in 1928 he was made president of the newly formed Stanco, Inc.

George Horton, Chicago Bridge & Iron Works, Chicago, flew to Tulsa last week.

* * *

Frank P. Cullum, of Wichita Falls, Tex., has moved his family to San Antonio, Tex.

* * *

Lou H. Johnson, president of the Pennzoil Company, sailed from New York for Europe last week.

* * *

E. R. Taylor, assistant buyer in the Skelly organization, Tulsa, spent his vacation in the Ozarks recently.

* * *

C. R. Erb, of the Union Oil Company of California, has been the recipient of congratulations following the arrival of a baby boy.

* * *

John R. Pemberton, California oil umpire, and Miss Alice G. Rawlins, have filed notice of their intention to wed in Los Angeles.

* * *

R. G. A. van der Woude, president of the Shell Petroleum Corporation, St. Louis, Mo., sailed from New York for England last week.

* * *

Paul Mahaffey, of the Happy Belting Company, who is a surgical patient at St. Johns Hospital, Tulsa, shows signs of improvement.

* * *

H. C. Adelheim, of the Leland Equipment Company, is on vacation and has left with his family for Chicago where he will visit relatives.

* * *

B. L. Smith, state agent, Continental Steel Corporation, Kokomo, Ind., whose headquarters are at Oklahoma City, Okla., was in Tulsa last week.

* * *

E. B. Lyman, of the public relations department of the Standard Oil Company (New Jersey), is back at his desk after a fortnight's vacation in the Adirondacks.

* * *

Herbert L. Pratt, chairman of the board of the Standard Oil Company of New York, Inc., accompanied by Mrs. Pratt, sailed from New York last week for a visit to Europe.

* * *

A. R. Patterson, formerly assistant refinery sales manager of the Freedom Oil Works Company with whom he was associated for the last 14 years, is now associated with the Wiloil Corporation, Pittsburgh, Pa.

* * *

Philip Clover, former Far Eastern representative for Tide Water Oil Company, has been appointed vice president and general manager of the Tide Water Oil Company of Canada, Ltd., with headquarters at Toronto.

* * *

Capt. Allan Innes-Taylor, oil scout in the Permian Basin, Texas, for several years, will sail September 1 with Admiral Richard E. Byrd to the Antarctic on a geological exploration trip. Captain Taylor, who was in charge of the dog teams on Admiral Byrd's first trip, will have similar duties on the trip this year.

* * *

Frederick G. Clapp, who has been in Persia advising that government as to its new concessions with Anglo-Persian Oil Company, recently completed a motor trip to Meshed in northeastern Persia and thence west across the country to Tabriz and Mosul over previously little traveled roads. He is to return home in August.

* * *

M. B. Heine, purchasing agent, Phillips Petroleum Company, Bartlesville, Okla., and Mrs. Heine, accompanied by A. A. Hopper, store manager, Frick-Reid Supply Corporation, Bartlesville, and Mrs. Hopper are on an extended vacation trip by motor. Their first stop was Chicago, thence to Detroit, through Canada to Buffalo and Niagara Falls, on to Washington and back by a southern route.

TECHNICAL QUESTIONS ANSWERED

By Charles K. Francis, Ph. D., Technical Editor

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible.

Inquiries must be signed but only the given initials will be printed. The source of the questions is considered to be confidential.

Questions requiring a dicussion of patents, the use of intricate formulas, extended computations, or cost estimates cannot be considered.

When the matter is of general interest the reply will be published within a reasonable time.

Selling Price of Natural Gas To Distributors and Consumers

Please inform me how natural gas is appraised in value when marketed direct to consumers by the well owner or company and what prices are obtained when the direct producers sell it to distributing companies. —F. S.

The latest available report covering the production and consumption of natural gas is the U. S. Bureau of Mines Report for 1931, by G. R. Hopkins, issued in October, 1932. This report is the authority for the data used here.

The steady expansion of the natural gas industry during the past decade was interrupted in 1931 when the production declined for the first time since 1921. The total marketable production in 1931 amounted to 1,686,436,000,000 feet, a decline of 256,985,000,000 feet, or 13 per cent, below 1930. This decline may be attributed chiefly to a falling off in demand for field purposes and for the manufacture of carbon black. The natural gas produced in 1931 had a total value at the wells of $117,505,000 and at points of consumption of $392,816,000.

The value of natural gas at the point of consumption was approximately three times what it was at the wells. The cost for transporting natural gas through the pipe lines is said to vary from about 2 cents to 17½ cents per 1,000 cubic feet per 100 miles.

The average price paid for natural gas by domestic and commercial consumers has shown a steady increase in recent years. In 1931 the average was 65.5 cents per 1,000 feet, compared with 63.5 cents per 1,000 feet in 1930. At least a part of this increase of 2 cents in the average price paid by domestic and commercial consumers was due to the mixing of natural gas with relatively higher priced manufactured gas.

The lowest price paid for natural gas in the large cities is 40 cents and the highest 90 cents. There are exceptions, under special local conditions, to both of these limits.

Contrary to popular belief, the use of natural gas for field purposes constitutes the largest item in consumption. Field work fell to a low ebb in 1931—for example, only 12,432 wells were completed against 21,240 in 1930—with the result that the quantity of natural gas used for such purposes declined 21 per cent in 1931.

The average price paid for gas at the wells may vary from nothing to about 25 cents per 1,000 cubic feet, depending on the volume available and the local demand. The average for the United States is about 8 cents at the wells and close to 22 cents at distributing points; distance from well and volume handled are important factors.

Total consumption, production plus imports minus exports, of natural gas in 1931 amounted to 1,684,249,000,000 feet. Of this amount 571,365,000,000 feet, or 34 per cent, was used for field purposes, 380,897,000,000 feet, or 23 per cent, was used for domestic and commercial purposes, 195,396,000,000 feet, or 12 per cent, was burned in the manufacture of carbon black, 138,343,000,000 feet, or 8 per cent, was utilized as fuel at electric public utility power plants, 75,548,000,000 feet, or 4 per cent, was utilized as fuel at petroleum refineries, leaving 322,700,000,000 feet, or 19 per cent, used for other industrial purposes. In comparison with 1930, these data represent gains in the proportions distributed for domestic and commercial consumption, electric public utility power plants and general industrial uses, at the expense of the proportions distributed for field and refinery purposes and for the manufacture of carbon black.

Checking Gravities For Crude Oil Deliveries

Will you please advise us the calculations required to check the correction on crude oil in arriving at corrected gravity in cases where the oil is paid for on the gravity basis? —H. D. L.

All gravities of petroleum liquids are stated and reported in terms of the A.P.I. system for hydrometer determinations. The relation of specific gravity and A.P.I. degrees is:

$$\text{Sp. gr. } 60°/60° \text{ F.} = \frac{141.5}{131.5 + \text{A.P.I.}°}$$

The checking of gravities requires a good hydrometer and a thermometer. Both of these should be certified to accuracy by the U. S. Bureau of Standards. Instruments of this grade may be obtained through the dealers handling instruments for the testing of petroleum products. Combination instruments are not so satisfactory as the separate hydrometer and thermometer, chiefly because the divisions are not easily read; the A.P.I. degree range is frequently too narrow for accurate indication, and there may be a large temperature lag.

As the temperature rises all petroleums increase in volume and as a result the hydrometer sinks more, so that higher degrees A.P.I. are indicated. When the temperature falls the reverse is true. There would be considerable confusion if there were no agreement for a starting point or standard temperature for measurements. In the United States the standard is 60° F., so all gravity and volume corrections are made to this temperature, unless some other temperature is selected by agreement.

Extensive research has been conducted by the U. S. Bureau of Standards on the influence of temperature on the gravity of liquids. They have found that temperature changes for petroleum oils vary with the character of the oil and the temperature, so a fixed correction on one kind of oil at one temperature cannot be applied to another type of oil and at some other temperature. However, the correction to 60° F. may be estimated if the oil is completely liquid at the standard temperature. It is not the practice to calculate the correction, but convenient tables have been prepared by the bureau. See B. of S. Tech. Paper 77, "The Density and Thermal Expansion of American Petroleum Oils."

The tables for making gravity corrections may be obtained either in chart or book form from the instrument dealers. The standard tables for gravity and volume may also be procured from the U. S. Superintendent of Documents, Washington, D. C. The gravity table is arranged showing observed temperature and hydrometer indication. Interpolations are necessary sometimes for temperature and the indication. An example will illustrate the use of the gravity table.

The hydrometer indications are arranged, whole numbers, at the top from left to right; the temperature reading down at the left. Suppose the observed indication is 34.3 at 70° F. Then locating in the column under 34 and on the line with 70° the figure 33.3, which is the correction for 34 to 60° F. However, the indication was 34.3, so adding 0.3 to 33.3 the correct gravity of 33.6° A.P.I. at 60° F. is obtained.

Specific Gravity May Serve for Indicating Quality

I would appreciate some of your observations as to the value of the specific gravity of motor fuel, provided it is of the right volatility. Our Italian drivers are to a large extent accustomed to judge the quality of gasoline by its specific gravity. Low specific gravity, 0.720 to 0.730, gasoline is considered the best grade. Is there some standard method available to the average small refiner for determining the octane number of a motor fuel?—I. A. C.

Specific gravity was used in the early days of the petroleum industry for grading the several petroleum liquids and for some years it was considered the most important property of gasoline. It is true that a gasoline having a low specific gravity will also have a low boiling point and consequently a high volatility. Recent investigations have demonstrated that in many gasolines the antiknock value increases as the specific gravity falls.

Specific gravity is not recognized in the standard specifications because other properties are considered more important and reliable for judging the quality. However, specific gravity is an essential item in most contracts, especially when large volumes are involved, and it is a material factor in marketing.

When additional properties are not known, or facilities are not available for determining them, specific gravity may serve as a guide to the quality of gasoline and what may be expected as to performance as a motor fuel. This is usually true when the product is offered by a reliable dealer or refiner. A low specific gravity gasoline made by a reputable refiner is quite likely to be a pure product, that is of low gum content, low sulphur content and of high volatility. Of course, it is true that low specific gravity does not always mean that the gasoline is of high purity; it may be quite the reverse in many respects. If one is obliged to make use of specific gravity alone when selecting gasoline, he should take into consideration the source and reputation of the company, as suggested above.

Since detonation is a distinct property there is no known method for determining the rating of a motor fuel, and expressing it in terms of octane number, except by measurement in a suitable engine. The standard apparatus used in the United States is known as the C.F.R. engine, which sells at the factory for approximately $1,500.

Trade Terms For Gasoline Not Used In Specifications

Will you tell me the difference if there is any, and give the specifications for High Compression, High Test, High Grade and Aviation Gasoline? Which is the better gasoline a regular 58-60 plus tetraethyl lead or an octane gasoline in the middle bracket?—H. H. S.

There are no gasolines officially known under the terms high compression, high test or high grade. These are expressions used in the trade in a general way and by many salesmen as pertaining to the specific gasoline each may be offering. The term high compression is a synonymous expression for antiknock. This may be explained when it is recalled that the highest useful compression ratio that can be used in an engine, is limited by the antiknock quality of the fuel. A gasoline of high knock rating will function satisfactorily in a high compression motor.

The term high test is vague, because it may be applied so as to mean one of several properties. Its first use was in connection with gravity in the early days of the industry. A high test oil, or product, means one with a high gravity. Sometimes the term means high quality in a broad way; that is, a good gravity, low gum and low percenatge of sulphur, good color and a good knock rating. The term high grade is used in a similar way.

There are two grades of aviation gasoline listed in the U. S. Government Specifications known as Domestic and Fighting grades. These are volatile gasolines, with low endpoints, and low gum content. See this page in issue of April 20, 1932, page 70.

No single property is enough to truly classify a gasoline as to performance in the internal combustion motor. Everything that is possible to know about its properties and composition is necessary, if one is to properly grade a gasoline. The different gasolines that are marketed as containing tetraethyl lead of the "Ethyl" grade, must have a knock rating of at least 78 octane number. The other grade, which may contain lead in limited quantities, called "Q" Grade, is required to test not more than 70 octane number.

The "middle bracket" refers to the trade designation of a special quality of U. S. Motor gasoline having a knock rating above 65 octane number.

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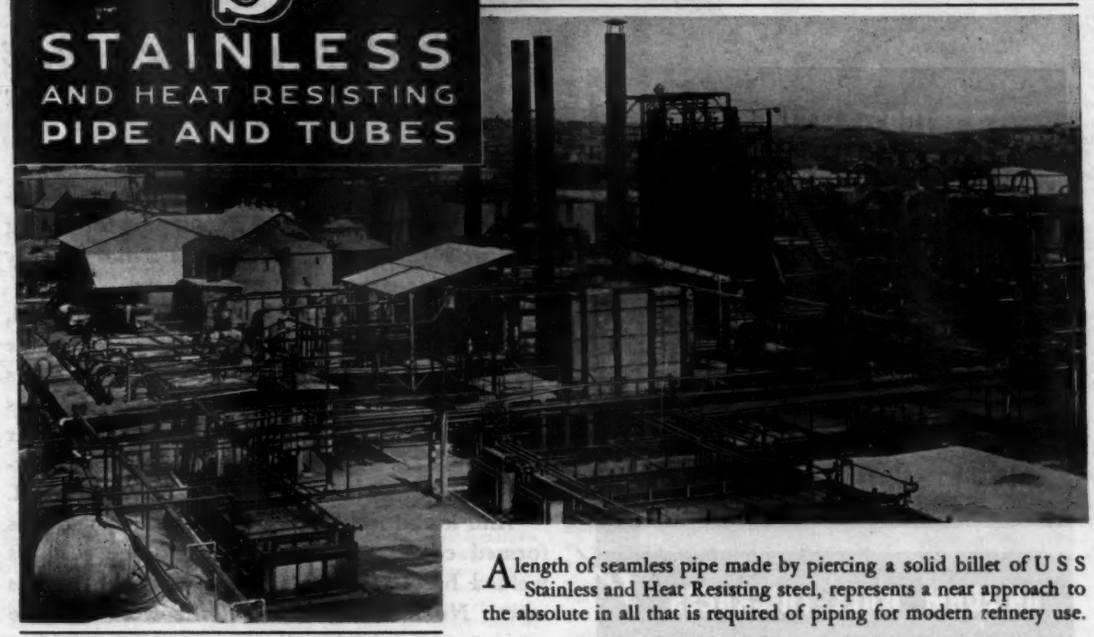
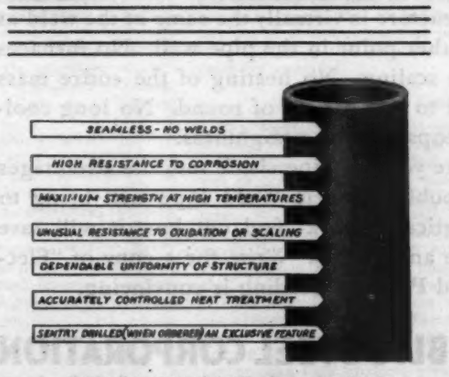
NATIONAL USS STAINLESS AND HEAT RESISTING PIPE AND TUBES





SEAMLESS - NO WELDS
HIGH RESISTANCE TO CORROSION
MAXIMUM STRENGTH AT HIGH TEMPERATURES
UNUSUAL RESISTANCE TO OXIDATION OR SCALING
DEPENDABLE UNIFORMITY OF STRUCTURE
ACCURATELY CONTROLLED HEAT TREATMENT
SENTRY DRILLED (WHEN ORDERED) AN EXCLUSIVE FEATURE

A length of seamless pipe made by piercing a solid billet of U S S Stainless and Heat Resisting steel, represents a near approach to the absolute in all that is required of piping for modern refinery use.

Engineers and superintendents will find just the advantages they have long looked for, when they adopt NATIONAL U S S Stainless and Heat Resisting Pipe and Tubes. Outstanding merits are extraordinary resistance to corrosive attack, improved strength at elevated temperatures, and absolute assurance of uniform wall strength; for all NATIONAL U S S 18-8 Stainless and Heat Resisting Pipe and Tubes are seamless—there is no weld.

These and other advantages (see list to the left) will convince the refinery engineer that this scientifically developed product meets, better than they were ever met before, the requirements of modern refinery operation. NATIONAL U S S material is produced with unrivaled facilities, by the largest manufacturer of tubular products in the world, and offers a complete piping service to the refining industry. Write for descriptive literature.

U S S Chromium-Nickel Alloy Steels are produced under the licenses of the Chemical Foundation, Inc., New York, and Fried. Krupp A. G. of Germany.

Visit the exhibits of the Subsidiary Manufacturing Companies of United States Steel Corporation, in the GENERAL EXHIBITS BUILDING—A CENTURY OF PROGRESS EXPOSITION, *Chicago.*

NATIONAL TUBE COMPANY

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SUBSIDIARY OF UNITED STATES STEEL CORPORATION

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES

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Federal Shipbuilding and Dry Dock Company
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National Tube Company
Oil Well Supply Company
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Check

THESE FEATURES OF ELECTRIC WELD PIPE

against any other pipe

- 100% WELD ✓
- LONG LENGTHS ✓
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- CLEAN INSIDE AND OUT ✓
- UNIFORM WALL THICKNESS ✓
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Do this and you can't go wrong, whether it's casing or tubing you need for a well, pipe for a long line, or a pipe for the building of a new refinery or the maintenance of an old one.

Certainly most pipe has a dependable weld, but Republic Electric Weld is 100 per cent. Some pipe can be had in long lengths—Electric Weld is made up to 50 feet. And as you check the features of this better pipe you will find that while other makes possess some of them, only Republic Electric Weld can honestly claim to have them all.

And it's all in the way it's made. Clean strip is formed cold to a perfect round. The seam is welded by electrical resistance where the edges meet. No metal is added at the weld and the grain structure is virtually the same at the weld as at any other point in the pipe wall. No furnaces to cause scaling. No heating of the entire mass of metal to make it out of round. No long cooling to jeopardize its straightness.

Before you buy pipe check into the advantages that Republic Electric Weld Pipe will bring to your particular work—find out how it will save you time and money. Write for a copy of "Electric Weld Pipe." A reading is convincing.

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NATURAL GAS DEVELOPMENTS

Commission Sets Hearing on Lone Star Gas Rate

AUSTIN, Tex., Aug. 7.—Chairman Lon A. Smith, of the Texas Railroad Commission, has announced that the commission has set August 18, at the hearing room in Austin, as the date and place to hear oral arguments in the Lone Star city gate rate case.

It will be recalled that the railroad commission was engaged for something like a year in making an appraisal of the Lone Star Gas Co. properties for the purpose of determining what would be a fair city gate rate to charge its subsidiaries for natural gas for domestic purposes at the city gate; that after this appraisal was completed a hearing lasting 4½ months was conducted in Fort Worth, which hearing ended June 29. Since that date the company has submitted a brief in support of its contentions, and the commission has been engaged in a study of the transcript of the record and the various exhibits submitted.

After the oral argument on August 18 it is expected that the commission will, within a short time, render its opinion and enter its order in this, the biggest utility rate case that has ever been passed upon in the State of Texas.

This decision will affect the rates charged at the city gate in some 250 Texas towns, including Dallas, Fort Worth and Waco.

If the representatives of any of the cities served by the Lone Star Gas Co. desire to be heard in this case, they will be heard on this date.

Natural Gas to Replace Artificial at Kitchener

CHATHAM, Ontario, Aug. 5.—The Public Utilities Commission of Kitchener, Ontario, is investigating a proposal by Leo A. Wilson of Sarnia to pipe gas to Kitchener from producing areas in Sarnia and Enniskillen Townships in Lambton County. Representatives of the commission are inspecting the operation of natural gas systems in Chatham, Windsor and Sarnia as a preliminary to further negotiation.

The Kitchener project would involve the scrapping of the existing artificial gas plant representing an investment of around $1,000,000. It is part of a larger project to pipe gas to Stratford and possibly to Guelph. If franchise negotiations are successful a company will be incorporated to handle the project. It is stated that a group of French investors are prepared to raise $500,000 toward the cost of the necessary pipe line.

WORKING ON GAS CODE

NEW YORK, Aug. 7.—Several meetings of directors of the American Gas Association have been held, at which it was decided to appoint a committee to draft a code under the National Industrial Recovery Act for submission to the directors at a meeting, to be held in the immediate future. It is possible that manufactured gas and natural gas companies may be segregated and that separate codes may be provided for each type.

GAS FOR OZONA, TEX.

OZONA, Tex., Aug. 7.—Residents of Ozona will be supplied with natural gas in the near future. Offices are being fitted up in Ozona and it is expected that the pipe line from the gas well into Ozona will be completed immediately. The Ozona Gas Co. is composed of H. Shaw, Harve Loomis and M. Williams, formerly of Baird, Tex.

Natural Gas Can Replace Cheaper Fuel in Seaboard Industrial Operations

By PAGE GOLSAN
Business Manager, Ford, Bacon & Davis, Inc.

Modern processes of manufacture are rapidly adopting continuous operations. Gas is the ideal fuel for such processes and in some instances a requirement. Both natural and artificial gas have certain definite values in addition to the equivalent heat value of other forms of fuel. Sales departments of gas companies have often referred to such values as intangible, but such a name is erroneous. These values are of definite tangible worth. The fact is, that many modern manufacturing appliances could not exist without gaseous forms of fuel.

To meet these needs gas is used in large quantities in concentrated industrial territories, where high types of manufacturing exist such as along the eastern seaboard. When operations are less complex, distillate and producer gas may be used, and in the heavier industries fuel oils. Natural gas can replace these fuels to advantage, even where fuel oil is cheap, as it is on the eastern seaboard.

As a paradox, the higher the type of industry the more money it often saves by paying a higher price per B.t.u. for its fuel. Manufacturers do not consider fuel costs on a mere B.t.u. basis since labor costs, spoilage, furnace repairs and combustion efficiency are often several times more important.

Owing to the low cost of bunker oil and coal, natural gas cannot compete favorably under boilers in some localities, except where the units are of special automatic type, as for instance, automatic steam and hot water boilers for industrial uses. However, along the eastern seaboard the field for other uses of gas is so great, that boiler fuel can be left out of consideration and natural gas lines supplying this district can be successfully operated.

Replacement of Coal

The replacement of coal as fired to producers offers a very real field for natural gas. The extra labor and repair cost of producer operation, together with the large heat radiation and combustion losses in the producer itself, make the substitution of natural gas, even on a direct B.t.u. equivalent, an easy matter. It is claimed by producer manufacturers that their units will operate at high efficiencies. However, these claims are not always attained. Producer users are not in the gas business and their operating departments have duties more urgent than high producer efficiency.

A typical example of the benefits of gas is found in the ceramic industry. In this buisness there is a definite saving by the use of gas in decreasing spoilage and breakage. This is proved even where natural gas is not available by the fact that modern ceramic plants use continuous kilns, firing them with producer gas. The value of a bottle kiln charged with pottery or art tile may be $4,000 or more. When color work and exact matching is important, spoilage becomes a matter of great expense. It is true that color spoils are not all lost. Some may be sold as seconds, but at lesser price. In one plant spoilage under intermittent coal firing conditions resulted in spoilage of 17 per cent. This is due to variable temperature conditions both in kiln cross section and in time intervals of coal firing by hand. Natural gas also reduces kiln firing labor and the actual time of the "wire" itself. Often in the case of special potteries, high priced sulphur free coal may be replaced. Certainly these factors cannot be termed "intangible."

Preferred Fuel

There never has been any question but that gas is the best form of fuel for continuous ovens for japanning, bakeries, core work, etc. The competition in this case is often coke, which is burned under very low efficiency, and at very high prices per B.t.u. and high firing costs.

In the steel industry, except for open hearths at tidewater using bunker oil, natural gas can usually replace all heat operations, except blast furnaces. In open hearths properly designed natural gas may not only reduce the time of run but increase furnace lining and setting life. In some plants open hearths are on a quality basis rather than a production basis and sulphur free oil is used. This results in an added fuel cost which natural gas can easily overcome. Producer gas or oil is replaced by natural gas for soaking pits and for ladle heating.

The glass industry offers a large market for natural gas, not only from the point of view of convenience, but from actual savings in operating costs over and above B.t.u. equivalents. Fuel oil or producer gas is used for pot heating, and at times lehrs are even operated by electricity, because of the evenness of the heat. In all of these cases natural gas offers the ideal fuel. The same applies to smelters and refineries.

There is perhaps no fuel available that is as satisfactory as natural gas for forging and annealing. Furnaces can be operated under neutral atmospheric conditions which reduces scaling to practically nil. That this is worth a great deal to a manufacturer is indicated by the fact that small gas producers or even purchased artificial gas is used for rivet heating at great expense, in order to turn out perfect rivets and avoid condemning of structural work. The value of a large casting may be seriously impaired if scaled.

The success of natural gas in Colorado in the metallurgical industry demonstrates the fact that the so-called intangible values of natural gas are more than talking points. These metallurgical properties own their own coal mines.

The feasibility of bringing natural gas to the eastern searboard is not dependent upon the domestic load, nor upon the low grade fuel consuming industries. If sufficient industrial business of the higher type can be connected, this load will be found to be of high load factor, and one that can afford to pay a good price for natural gas.

U.G.I. INCOME

PHILADELPHIA, Pa., Aug. 7.—Net income of United Gas Improvement Co. and subsidiaries with the exception of Philadelphia Gas Works is $7,525,061 for three months ended June 30, as against $7,909,013 in the same period last year.

The amount applicable to the common stock of the company was $6,904,866, or 29.7 cents a share, compared with $7,822,052 or 33.6 cents a share in the same quarter last year.

Blanket Code Effect on Texas Gas Company Rates

AUSTIN, Tex., Aug. 5.—The Texas Railroad Commission has notified gas utilities by telegraph that the wage and hour codes will not be made the basis for increasing gas rates to consumers.

Chairman Lon A. Smith answered inquiries of Amarillo Gas Co., West Texas Gas Co. and Dalhart Gas Co., whether the commission "approved the president's plan for gas utilities, and does the commission desire that we co-operate?" The message said that "prices must be increased enough to offset increased operating costs."

Chairman Smith replied that the commission will refuse to attempt influencing city councils in original jurisdiction on gas rates, and that it "does not understand the code to recognise that prices must be increased, but rather understands that prices are to be increased only in cases where the present income will not absorb the increased expenses and yield a fair return. This can be determined only after hearing. We further believe that the code contemplates that every business co-operating wholeheartedly in the national program, will as far as possible absorb this increased expense without passing it on to an overburdened public."

Chairman Smith said "the Texas Railroad Commission is in full accord with the president's national recovery program."

Propose Line From Burrton to Supply Emporia, Kans.

TOPEKA, Kans., Aug. 7.—The Kansas Corporation Commission heard the application of the Inland Pipe Line Co. of Emporia for a certificate of convenience and authority to operate a pipe line from the Burrton gas field to Emporia, with possible extensions to Osage City and Burlingame. The company holds contracts for a minimum supply of 2,000,000 feet of gas a day from about 4,000 acres of gas lands. It proposes to furnish gas to Emporia and other towns along the route of the pipe line.

The Kansas Utilities Co. now distributes the gas at Emporia from a supply of the Cities Service pipe lines. Officials of the Inland said they were prepared to supply gas for 30 cents per 1,000 feet at the city gate.

TO DRILL 17 WELLS

CHATHAM, Ontario, Aug. 5.—Continental Gas Corp. of Toronto has elected an entirely new board of directors and is planning an extensive development program in Ontario and other fields. The new officers include: President, William Lorimer, former president of the Dominion Oil Co.; vice president, Capt. Van Woert, Toronto; directors, Charles C. Lee, H. J. A. McEwan, Goderich; Senator H. W. Laird, Hamilton. The company has 13 producing gassers in Binbrook township, Wentworth County, and Walpole Township, Haldimand County. It is planning to drill 17 additional tests for gas in the same area. The company has purchased outright a 92-acre tract in New York State from the Mid-East Gas Syndicate, a subsidiary of Homestead Oil & Gas, acreage being adjacent to an active drilling test.

STRATHROY GAS PROJECT

CHATHAM, Ontario, Aug. 5.—The Strathroy, Ontario, town council has appointed a committee to consider proposals by Leo Wilson and associates of Sarnia for piping natural gas from fields in Lambton County to Strathroy.

FIELD PROBLEMS FROM READERS

Edited by Thomas F. Smiley

Scale in the Water Jacket and How It Reduces Efficiency

It is not clear to me just why the use of hard water can cause serious damage to an internal combustion engine. I know that in the course of time a scale forms in the water jacket and that this interferes with the efficient operation of the engine, but I am not sure just why it does that. Please explain this. Have there ever been any experiments conducted to find out definitely how seriously the effect of this scale from hard water is? I'll be glad to get any information along this line.—E. O. R.

Experiments such as you refer to were made by H. M. McClain, chemical engineer for the Magnolia Petroleum Co., in Oklahoma City, Okla., and they were discussed by him in a paper from which the following is quoted:

The general problems encountered in the operation of a pumping engine, while using a hard untreated cooling water, are:

1. Replacement of cylinder heads, cylinders, pistons and piston rings.
2. High oil consumption.
3. Low operating efficiency of engines.

It is believed that the scale accumulated in the water jackets of pumping engines creates a high operating cost, and the importance of removing the scale from the water jackets and treating the water to prevent the depositing of the scale has not received sufficient consideration by the operators of pumping engines in the oil fields.

In every case where the engines have been cleaned of scale and the water has been treated the results obtained in the way of reducing general repair and oil consumption and increasing the operating efficiency of the engines have been remarkable. This being the case the problem remained to find the most practical and economical method for cleaning the water jackets and treating the cooling water.

It is obvious that the cooling of an engine depends upon the transfer of the heat developed within the combustion chamber to the water in the water jacket.

The retention of heat within an engine, when sufficient cooling water is available, is caused by an accumulation of a foreign substance, as a scale, in the water jackets, and depends upon the quantity and the insulating property of the chemical ingredients collected as the scale.

The quantity of heat developed within an engine is governed by:

1. Fuel used for operating.
2. The speed of operation.
3. Lubrication.
4. The load carried by the engine.

The following table gives comparisons of the amounts of heat (B.t.u.) absorbed per rated horsepower per hour by the water circulating through both the clean and scaled cylinder water jackets and the per cent increase in heat absorbed by the water after removing the scale:

Cylinder No.	Size of cylinder	Before removing scale	After removing scale	Per cent increase
1	45	1,570	2,500	59
2	45	1,990	2,900	46
3	45	330	2,070	150
4	50	1,040	2,090	101
5	50	1,100	2,020	83
6	50	1,530	2,490	63
7	50	1,530	2,300	50
8	40	1,100	1,860	69
9	40	950	1,750	84
10	40	1,040	1,875	80

This department is conducted in order that men connected with the drilling, producing or transporting branches of the petroleum industry may obtain aid in solving problems that confront them in their work. Readers are invited to send questions freely. These questions will be placed in the hands of persons capable of answering them authoritatively, and the answers, based on the best available information, will be published.

Each question should give as much detail as possible, especially if it involves depth of sands, types of sands and operations on adjoining or nearby properties. The source of questions will be considered confidential, and only the initials of the sender will be published. Questions involving patented processes, intricate formulas or estimates of cost cannot be answered. If an immediate answer is important, one will be given by mail when the writer requests it.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or improved old ones.

Character of Region Determines Choice of Geophysical Method

Is there much to be said with reference to the suitability of any one of the geophysical methods of exploratory work as compared with the other methods? Is one as good as another or do different fields and different circumstances call for different instruments?—D. E. O.

Geophysical methods of oil prospecting may be classified as magnetic, gravitational, seismic and electrical. Each may be used alone, or one method of survey may be used to check the results obtained by another. The character of the area to be explored will determine which method is preferable in any particular case.

Several instruments are used in making magnetic surveys. The magnetic method is the most rapid and least expensive of all the geophysical methods, and there are no topographical limitations to its application, as in the case of the gravitational method. These important characteristics combined with the fact that no highly trained specialist is required to conduct the field observations, serve to make this method suitable for general application, while as an auxiliary method, a magnetic survey may be used for the verification and amplification of information obtained by other methods.

The main requisite for a successful application of the gravity method is the existence of a density difference between the various minerals and rocks that are in contact, and it is evident that the greatest success may be expected where large bodies of very high and very low density occur comparatively near the surface. The effect of such a body on the torsion balance, used in the gravitational method, diminishes rapidly with depth, and if this disturbing feature is buried too deeply it may not be possible to detect its presence. On the other hand, comparatively small irregularities at no great depth exert an appreciable influence upon the balance.

The gravitational method has proved particularly useful in disclosing the presence of structural features in areas where the sedimentary covering conceals the structure of underlying rocks, making it impossible for the geologist to employ his usual methods. It has been applied extensively in the United States in revealing the presence of salt domes, and in acquiring quantitative information as to their depth and the exact position of their steeply dipping sides. In the case of anticlines and synclines, in which the cores are heavier or higher than the adjacent strata, it is possible by this means to determine the approximate position of the main axis of folding, as well as the relative steepness of the flanks of the fold.

The seismic method of survey is most useful over areas in which the geology is comparatively simple and in which a medium of high elastic wave transmission velocity lies beneath one of low velocity. The most successful application of this method has been the location of salt domes in the Gulf Coast regions of Texas and Louisiana. These structures consist of huge plugs of rock salt frequently covered with a massive cap of anhydrite. They intrude from great depths into unconsolidated tertiary clays and sands, and present an interesting and simple problem which may be effectively dealt with by this method, owing to the well marked velocity difference between the high-speed salt and the comparatively low-speed tertiary sediments.

With an ever increasing knowledge of the action of the seismograph in possible oil-bearing areas the petroleum geologist is now in position to make general application of this method and interpret the field reports in a manner that makes the location of possible oil-bearing structures quite definite as to shape, size and buried depth.

Practically all subsurface irregularities possess electrical properties which differ from those of the surroundings and in consequence methods of investigating subterranean anomalies have been developed which make use of these well-marked differences of electrical properties, such as conductivity. Several electrical methods have been evolved for this purpose of locating metallic ore deposits and revealing geological features, and although the methods differ materially in certain respects, they are all based on the existence of outstanding differences of conductivity between the mineral bodies and the enclosing rocks, or between adjacent geological formations. The ratio of electrical conductivities encountered in practice between adjoining rocks and minerals is extremely large, being in some cases of the order of several millions, and it provides a much larger range than that furnished by any of the other geophysical methods.

The electrical methods may be divided into four groups as follows: Spontaneous polarization, equipotential, resistivity and the electromagnetic methods. Much work has been done in developing these various types of electric instruments and certain structural problems have been solved by means of them chiefly with the equipotential and resistivity methods.

Some inventors have made claims that electric methods will determine oil and gas in place. The geological profession has not accepted them as proven but there is no disposition to belittle the possibilities of what may be developed along these lines.

Why Was It Called That?

SKYSCRAPER

Office buildings erected in various cities by the Henry L. Doherty Co. and by the Shell, Standard, Gulf, Humble, Texas and other oil companies are rated as skyscrapers, the name commonly given to structures of exceptional height which thus "scrape the sky." The first skyscraper ever built, the Home Insurance Building in Chicago, was razed to make way for the new 42-story Field Building. Erected in 1885 to a height of 10 stories, and later increased to 12, this structure was the creation of William Le Baron Jenney, versatile engineer who built bridges for General Sherman's famous march to the sea. He also is reputed to have introduced pumpkin pie to Paris. Jenney got the idea of the skyscraper from the bamboo huts of the Philippines, for which four standing trees supply the framework.

Believes Casing First Was Used in Shamburg Well in 1869

The following letter has been received from J. N. Bish, of Haynesville, La.:

"In the July 20 issue of The Oil and Gas Journal you quote a statement from George Koch of East Sandy, Pa., published in the Petroleum Age in 1888, that the first oil well was cased in 1868.

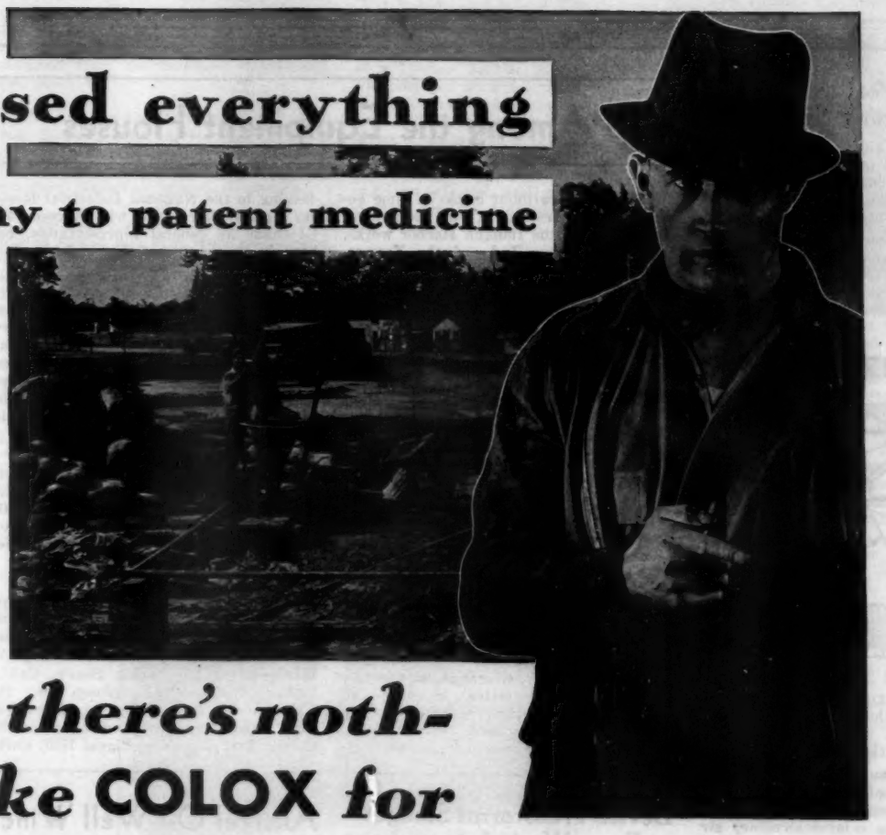
"I am quite sure that this was a mistake as I have it on reliable authority that the first well was cased by Jonathan Watson of Titusville in 1869 on the Heald farm at Shamburg, Pa. The casing was 5⅝-inch iron pipe, made by the South Chester mills at Philadelphia. This casing was used to get a shutoff from the Mountain sand water. Previously this shutoff had been accomplished with a flaxseed packer, set on 4-inch casing after completion.

"I can assure you this information is authentic as I have it from men who were there in those earliest days. This is the earliest known instance of casing being used in an oil well to be drilled through.

"This well was 600 feet deep and about 250 feet of casing was set. The rest of the hole was open to the two pays the black and green sands located 30 feet apart.

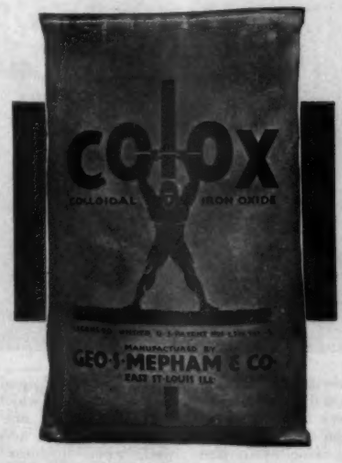
"John J. Carter, founder of the Carter Oil Co., later became a partner of Jonathan Watson."

I've used everything from hay to patent medicine



...but there's nothing like COLOX for mud conditioning

We used it for a mud weight material to start with (it makes pumpable muds up to 18 to 20 lbs. per gallon), but that's not the half of it. Colox *conditions* the mud to take care of the troubles you run into when drilling any well, and it sure is economical to use. You get extra weight plus a thin mix. This thin mix is easier to pump, carries the cuttings away from the bit faster and lets the cuttings and the gas separate quicker.



Don't wait until you are in trouble before using Colox. Pump it in at the start and avoid trouble. It's the most economical and safest in the long run.

BOOKLET ON DRILLING FLUIDS that gives much valuable data on drilling fluids in addition to complete information on Colox will be sent on request.

Manufactured Under Exclusive License by

GEO. S. MEPHAM & CO.
2001 Lynch Avenue • • East St. Louis, Illinois
for Mid-Continent and Gulf Coast areas and

C. K. WILLIAMS & CO.
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for Pacific Coast area

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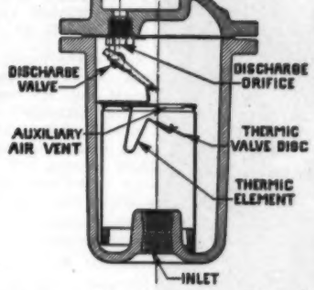
THE REPUBLIC SUPPLY COMPANY
in the Mid-Continent and Gulf Coast areas

NEW AND IMPROVED EQUIPMENT

Important Features Found in Armstrong Steam Trap

An automatic air by-pass to promote quick heating and integral with the Armstrong inverted bucket steam trap has been developed by the Armstrong Machine Works of Three Rivers, Mich.

Air escapes from an ordinary inverted bucket trap by passing through a small vent in the top of the inverted bucket and then rising to the top of the trap from which it is discharged ahead of the



condensate. The air vent must be kept small enough so that any steam passing through the vent will be condensed to make up for radiation loss from the trap.

For quickly removing air from jacketed kettles, reboilers and pipe coil radiation, Armstrong now offers a special trap bucket having a large auxiliary air vent. This vent (see illustration) is closed by a flat disc of stainless steel on the end of a strip of rustless thermostatic bi-metal which in turn is double riveted to the bucket cap. As long as the trap is cold, the disc is held away from the vent and air escapes so rapidly that the bucket cannot float and close the discharge valve. Air blows through until steam fills the radiation and reaches the trap causing the thermic strip to seat the disc which prevents steam from escaping through the auxiliary vent. Thereafter, the trap functions in the normal manner and any air that may be mixed with the steam will escape through the standard fixed vent.

Eagle-Picher Has Line of Heat Insulation Materials

The Eagle-Picher Lead Co. with offices in Joplin, Mo., and Cincinnati, Ohio, has a complete line of materials for the heat insulation field including Eagle blanket insulation, Eagle "77," Eagle "55" pipe covering, Eagle Insulseal waterproofing cement and Eagle "66" insulating cement. The last finds widest use in the oil and gas industry.

Eagle "66" is a plastic insulation made by a special process that first forms small "springy balls" of mineral fiber, then coats each of these springy balls thoroughly with binder. Thousands of minute air cells are in every one of these balls, and the balls are so constructed that they remain intact after the cement has been mixed in water, applied and dried. Thus an exceptionally high heat-saving efficiency is secured up to 1,500° F. For example, the outside surface temperature of "66" applied 4 inches thick on a hot surface 825° F. will only be 140° F. Thus applied, "66" will provide heat-saving efficiency of approximately 97.8 per cent. The heat loss will be reduced to 122 B.t.u. per square foot per hour.

Among the Equipment Houses

Three years without a loss of time accident is the record of the mechanical department of the Indiana Harbor works, in East Chicago, Ind., of the Youngstown Sheet & Tube Co. W. D. Cleavenger is superintendent of the department, where 312 men are employed.

—

The Moorlane Co., of Tulsa, distributor of refinery and power plant equipment, has opened offices and put in a complete stock in the M. & M. Building, Houston, Tex. The company handles Erie bolts and nuts, high tensile material, Ford chain blocks and Akron gaskets. E. L. McClain is district manager, assisted by A. T. Crump.

—

Ralph Hague, representing the Bridgeport Machine Co., Wichita, Kans., has been in Tulsa several weeks purchasing used pipe and oil well casing. Mr. Hague was formerly manager of Bridgeport's Tulsa branch.

—

Two changes are announced by the Allis-Chalmers Manufacturing Co., Milwaukee, Wis. L. W. Grothaus, who served as general representative, in charge of the sales organization, is appointed as assistant to the president. He will direct the company's interests in matters pertaining to the National Industrial Recovery Act. Walter Geist, who succeeds Mr. Grothaus as general representative, has been in the service of the company since 1909.

—

G. A. Hastings, Middletown, Conn., has been elected secretary and treasurer and a director of the Russell Manufacturing Co., sales division, manufacturer of Rusco brake linings and other automotive products, and of the Russell Manufacturing Co., Ltd., Canadian subsidiary.

—

The Worthington Pump & Machinery Corp., Harrison, N. J., has appointed the Kroeschell Engineering Co., 2306 North Knox Avenue, Chicago, as authorized dealer in the Chicago area for Worthington refrigeration equipment.

—

The Southwestern Engineering Corp., Los Angeles, Calif., received the following contracts in July: High pressure heat exchanger and large condenser for the Hancock Oil Co., Long Beach, Calif.; 52-foot fractionating column for the Lakeside Oil & Refining Co., Maricopa, Calif., and large heat exchanger for the Estado Petroleum Co., Signal Hill, Calif.

Linco Chuck Gauge Is New Tool for Service Station

An innovation in service station equipment makes its appearance this month with the announcement of the new Linco chuck gauge. This one-operation gauge inflates tires, jumbo, balloon and high pressure types, and registers air pressures at the same time. It is easy to install, attaches to the end of any air hose and can be used on air reel or air

tower. It is of solid bronze construction, practically unbreakable, not affected by weather or shock. The gauge is so designed as to permit reading of pressures from any angle. A simple hand adjustment assures accurate reading. Other features include a protective window of celluloid guards against dust, dirt and sand. Further information may be obtained by addressing the Linendoll Corp., 228 North LaSalle Street, Chicago.

Device Transforms Sludge From Waste Into an Asset

Sludge Pumping, Inc., Pier 18, North River, New York, has placed on the market a device, invented by Gunnar C. Engstrand and Charles A. G. Armstrong, engineers, which is said to have solved the problem of removing and disposing of the residue found in all fuel oil tanks.

To one end of an annular steam jet pump is attached a suction intake, and to the other end is attached a flexible steel hose. Steam to operate the apparatus is obtained through the small flexible hose connected to the pump.

Arrangements of this equipment can be had making it applicable to refineries, oil fields, etc. In fuel oil tanks, slop tanks, storage tanks and in cracking coil tanks will be found the sludge and therefore the work for this invention.

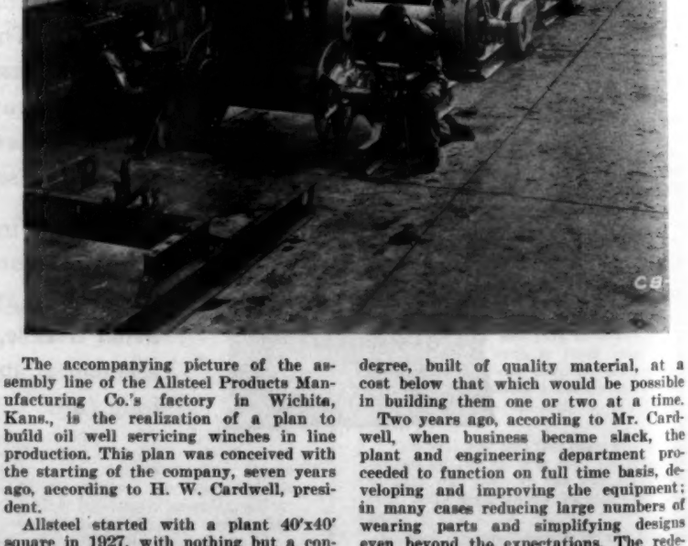
The apparatus is simple in operation. The suction intake is dipped into the sludge which is sucked into the steam jet pump and forced through the hose to openly discharge into the barge, tank, tank car or truck as the case may be. In passing through this apparatus the consistency of the sludge, no matter of what nature, is transformed back into an oily condition, as a result of which it can be pumped over great distances by the ordinary transfer pump and again used as fuel.

In other words, the removal of the sludge, becomes inexpensive, and the sludge, which was a waste, becomes an asset.

—

Joseph T. Ryerson & Son, Inc., Chicago, have published a larger and more complete stock list than any of their previous issues. The book's 232 pages include complete information and data on practically every kind of steel made, including all special grades of cold finished steels, alloy steels, stainless steels, etc., also brass, copper and other nonferrous metals.

Allsteel Oil-Well Winches Simplified and Improved



The accompanying picture of the assembly line of the Allsteel Products Manufacturing Co.'s factory in Wichita, Kans., is the realization of a plan to build oil well servicing winches in line production. This plan was conceived with the starting of the company, seven years ago, according to H. W. Cardwell, president.

Allsteel started with a plant 40'x40' square in 1927, with nothing but a conviction that there was a potential market for winches, engineered to a high degree, built of quality material, at a cost below that which would be possible in building them one or two at a time.

Two years ago, according to Mr. Cardwell, when business became slack, the plant and engineering department proceeded to function on full time basis, developing and improving the equipment; in many cases reducing large numbers of wearing parts and simplifying designs even beyond the expectations. The redesigning of equipment assisted greatly in the reduction of manufacturing costs and

added many features recommended by the production engineers of various oil companies.

Along with this development work there has been carried on an educational campaign, bringing before the oil company production engineers and superintendents the possibility of the savings possible in servicing oil wells with portable winch equipment. Many of the old-time oil operators were skeptical but in the last few years it has become common practice to service wells with portable pulling winches, either mounted on tractors or skid type mounted on trucks.

While the accompanying picture shows the assembly line on the HS-5,500 skid winches for mounting on trucks, there are two larger sizes and two smaller sizes of skid winches manufactured by the Allsteel Products Manufacturing Co., along with five sizes of oil-well servicing winches for mounting on "Caterpillar" tractors, as well as three sizes of pipe line booms for mounting on "Caterpillar" tractors and a pipe line backfiller for mounting on "Caterpillar" tractor wide gauge model 25.

Through the co-operation of the Caterpillar Tractor Co. and Caterpillar tractor dealers, oil companies purchasing the equipment of the Allsteel Products Manufacturing Co. powered by "Caterpillar" motors or mounted on "Caterpillar" tractors, receive the advantage of the availability of service in or near any oil field in the world.

In addition to powering their skid units with "Caterpillar" motors, the same units are available powered with other motors, such as Waukesha, Hercules and McCormick-Deering. Likewise, their skid units are furnished with electric motors as power where electrification demands the use of electric powered oil-well servicing winches.

Late Engine Design Ideas Incorporated in Superior

The Superior portable Diesel power unit manufactured by the Superior Engine Co., Springfield, Ohio, is a complete self-contained plant on steel I-beam mounting, including radiator cooling system, auxiliary gasoline engine driven air compressor and air receiver for starting, fuel oil tank, lubricating oil tank, clutch and pulley, etc. Air cleaners are provided on the intake to protect pistons and cylinders from excessive wear due to grit and dirt in the atmosphere. A substantial steel canopy covers the complete equipment. This unit can be located anywhere, since it is independent of local water supply. It requires little space and being of medium weight may be easily moved from one location to another.

The unit is guaranteed to consume not over .45 lb. of fuel oil per b.h.p. hour when operated at rated load. The engine is said to represent the latest ideas in Diesel design, with every feature incorporated that can add to dependability, economy and low maintenance expense. It is built for heavy duty and continuous service with crankshaft and other principal members oversize. Construction is enbloc, with removable, hone-finished cylinder liners. The simple, efficient fuel injection system permits variable speed when desired. Fuel pressure varies in direct proportion to the speed at which the engine is operated, a feature designed to insure perfect combustion and firing under all speed and load conditions. The full pressure lubricating system provides ample lubrication with lowest possible oil consumption.

IDEAL SPLASH-PROOF MOTOR

The Ideal Electric & Manufacturing Co., Mansfield, Ohio, announces a splash-proof motor especially designed for use where water or other liquids may be splashed on it. It is also suitable for use where the equipment is frequently washed down with a hose as a stream of water striking the motor at any angle or even pointed directly into the ventilation duct will not wet the motor windings.

Notes About Trade Literature

A new booklet, No. 133, illustrating and describing the Copes double-control regulator, which feeds the boiler accordingto the rate of steam flow, with correction for water level changes, may be obtained from the Northern Equipment Co., Erie, Pa.

—

The Gunitor Co., 1227 Bearsdley Avenue, Elkhart, Ind., has for distribution a bulletin giving a detailed description of the Gunitor, which applies pneumatically concrete, cement or refractory material.

—

A four-page bulletin describing a new line of splash and drip proof motors and control for every machine requirement has been issued by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., especially suited to the requirements of machines where splashing occurs.

—

D. W. Haering & Co., Inc., 3408 Monroe Street, Chicago, announce publication of a 16-page booklet on water treating. This booklet describes the application of H-O-H treatments to various water problems and explains in detail the cause and effect of many problems common to boiler and hot water equipment. It contains practical information of value to the plant engineer, chemist, and maintenance men. A copy may be obtained on request, stating business connection.

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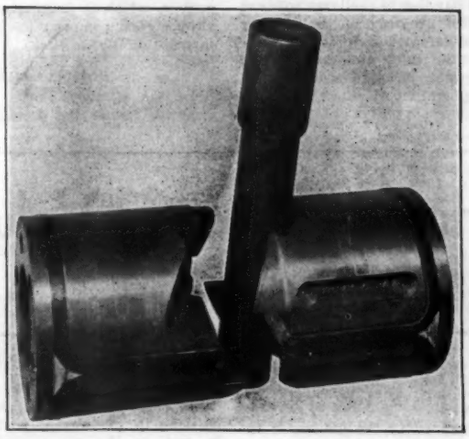
The Worthington Pump & Machinery Corp., Harrison, N. J., sends on request a bulletin describing Worthington compressors for refrigeration.

Blowout-Preventer Rams Center Drill Pipe in the Hole



A new design of blowout-preventer rams which center the drill pipe in the hole as pressure is applied by the operator is one of the latest products of Cameron Iron Works, Houston, Tex.

Wing guides, shown here, are built as integral parts of the rams and designed to a point so that they cannot fail to catch the drill pipe and pull it to the exact center of the preventer opening when the rams are closed.

With the original flat surface on each side of the rams eliminated, the possibility of the rams not entirely closing immediately is removed regardless of the angle at which the drill pipe is standing through the preventer opening.

Further improvement in these new rams is in the packing feature. The corner of the wings extends above the packing so as to protect the ram packing at the point where the drill pipe is contracted.

The pipe centering rams are interchangeable with old Cameron preventer rams, and Cameron preventers being marketed now are equipped with the improved safety rams.

Nickel-Clad Steel Sheets and Plates for Wider Use

H. Boker & Co., Inc., 103 Duane Street, New York City, are now offering their nickel-clad steel sheets in thin gauges, hot-rolled, also cold-rolled, with bright and polished finish.

For many years the company has been selling nickel-clad steel sheets and plates and is in a position to furnish hot-rolled annealed and pickled sheets, from No. 16 U. S. S. gauge up to and including heavy plate sizes, and also cold-rolled sheets and strips with polished surface, as thin as No. 32 U. S. S. gauge .010 inch.

These clad sheets are made by hot welding at a high temperature approaching incipient fusion, under high pressures, a slab of pure nickel on to a steel base. The nickel surface can be supplied on one or both sides. For heavier equipment, such as tanks, the hot-rolled, annealed and pickled sheets are usually used, while for general trim, combined with corrosion resistance, cold-rolled or polished sheets can be furnished where a brighter and smoother surface is desired.

"Oilwell" Belt-Tightener Designed for Durability

The new No. 50 and No. 80 belt-tighteners announced by the Oil Well Supply Co., Oil City, Pa., come with 4-foot, 6-foot and 8-foot frames. They are designed for long life, dependable performance and maximum convenience. Both the No. 50 and No. 80 tighteners can be used with either V-belt or endless flat-belt drives. These new belt-tighteners can be adjusted and serviced from either side, thus assuring maximum safety as well as convenience.

BRIDGEPORT IS DISTRIBUTOR

The Bridgeport Machine Co. of Wichita, Kans., has been appointed distributor of Jensen jacks and power units manufactured by the Jensen Brothers Manufacturing Co., Coffeyville, Kans. A full line of this equipment, which consists of jacks and powered pumping units in sizes for every depth and size of well, is now being carried in stock at Bridgeport's Kilgore, Tex., branch. The other company stores in Kansas, Texas, Oklahoma and New Mexico will carry the equipment as field conditions call for it.

New Line of Lightweight Fittings Made by Taylor

The Taylor Forge & Pipe Works, Chicago, has put on the market a new line of lightweight fittings for use with light wall piping and Taylor spiral pipe. These new fittings are fabricated from No. 10 gauge (.134-inch) steel by welding. Die

formed, they present a smooth workmanlike appearance, and offer minimum resistance to flow.

Center to end dimensions conform with the 125-pound American standard. They are furnished plain end or flanged, or flanged one end only.

Attached flanges are forged steel of either the Taylor forge standard or American standard diameter and drilling. These fittings reduce weight and lower erection costs. They are suitable for hydraulic pressures of 200 pounds per square inch, or more on smaller sizes. The fittings are tested to 50 per cent in excess of the working pressure for which they are ordered.

Centrifugal Pump Handles Oil Heated to 800 Deg. F.

Harmain Engineers, Inc., affiliated with the National Steam Pump Co., Upper Sandusky, Ohio, have developed a centrifugal pump for handling oil up to 800° F., with capacities ranging from 150 to 600 gallons per minute and for pressures up to 2,000 pounds. The unit is in striking contrast to the huge reciprocating pumps formerly used to handle hot oil. Compactness is a characteristic of this type of design. There is a distinct saving in the size of the building and the foundations required for installation of the pump, and the equipment can be controlled readily by a flow meter mounted on the main control panel of the operating room.

The web on the lower part of the head slides in a groove in the foot and retains the pump center-line from side shift on the pump base. These feet, which are mounting standards, are water-cooled from the same system as the main shaft bearings. A second system of water cooling is used for preventing heat from the hot oil from being transmitted along the pump shaft to the main bearing. This operates as follows: Bolted in the end of the pump is a packing box with a gasket at the rear. The water flows around this box, even in the rear of the packing, so that any movement of the oil through the packing must first pass over a cold surface. After the water leaves the packing box it circulates into the gland and strikes the sleeve on the shaft. Any oil which might leak through the packing passes into this water. The water which is likely to come in contact with oil is kept separate from the water that cools the bearings, standards and base so that it can pass to an oil trap. The other cooling water is conducted to an outlet after it has completed its cycle.

Every precaution must be taken in this type of unit to prevent possibility of hot oil escaping. To accomplish this a sleeve on which the pacing rides is keyed to the shaft. One end of this special sleeve overlaps a bronze sleeve on which the gland rides, forming a small packing box which provides a seal between the shaft and the special sleeve. The bronze sleeve contacts the cooling water, but not the hot oil. An auxiliary gland on the front of the primary gland prevents the water from being thrown by the revolving shaft.

Gulf Coast Fields

(Continued from Page 54)

Genoa geophysical prospect in Harris County. It was the third deep test drilled on the prospect and was quit at 5,708 feet. Location is in the August Whitlock, in which survery the other two tests were drilled. They were Humble Oil & Refining Co.'s No. 1 and 2 Woodburn, put down in 1929 and 1930 when that company owned the entire block. The second Humble test encountered a sand at 3,425 feet in which it was completed for a 15,000,000-foot gasser. The well failed to hold up and after being deepened was abandoned and the prospect was turned back to H. C. Cockburn Oil Corp., which discovered it.

Iowa Field

Abandonment of Magnolia Petroleum Co.'s No. 1 Bowman, three-quarters of a mile west of production at Iowa, on the Calcasieu-Jefferson Davis Parish line, marks the first failure for that district. A total of 12 wells has been drilled The Bowman test was quit at 7,590 feet, where it was dry. Shell Petroleum Corp.'s No. 4 Heyd, east of the field, and which blew out over a month ago, still is defying all efforts to control it. A crater more than 30 feet across has formed. Work of fighting the blowout has been hampered by the location of the well in a swamp.

Port Neches

Texas Co.'s No. 1 Orange National Bank, south extension test of the Port Neches Field, southwestern Orange County, swabbed and flowed some oil and wash water in testing sand at a total depth of 4,779 feet but sanded and quit after two hours and now is being cleaned out.

Fort Bend County

Phillips and associates have started drilling in their No. 1 Grigor, J. S. O'Connor Survey, in the extreme northwest corner of Fort Bend County, approximately 4 miles southwest of the Orchard Dome. The well previously has been reported as being in Austin County. The location is on the flank of what is known as the O'Connor Basin. The operators are A. W. Phillips, R. P. Phillips and R. T. Craig, and contract has been let to Taubert & McKee to drill to 6,000 feet.

Grimes County

Foster and associates have made location for another test in the Yarborough district of Grimes County, southeast of Navasota. It is on the Quinn land in the S. F. Austin Survey, which adjoins to the east the Samuel Fulton Survey, in which Koch and associates recently abandoned a Cockfield sand test on Haferkamp farm. The latter was quit at a total depth of 3,779 feet after drilling through the Cockfield topped at 3,464 feet (minus 3,181 feet subsea). It encountered sand at 3,505-15 feet which showed some oil but on drill stem test made salt water.

Washington County

Another location of particular interest along the same trend and approximately 8 miles southwest of Navasota just over the Grimes County line in Washington County, was that made by George W. Strake. The location is on the Henry Wehmeyer farm in the Minnijah Byrd Survey. Mr. Strake, the discoverer of the Conroe Field, has a block of approximately 23,000 acres in that part of Washington County. The test has spudded and is being drilled by the same crew which brought in the first Conroe well.

Pledger Prospect

Danciger Oil & Refining Co. has killed its No. 1 Hunt, wet gasser discovery well of the Pledger prospect, northwestern Brazoria County, preparatory to working it over. Rig from No. 2 Hunt, now standing at a total depth of 7,724 feet, has been moved on. The well was brought in last November from a sand at a total depth of 6,782 feet and gauged a pressure of 2,675 pounds and since has been making 30 and 50 bbls. of distillate daily. The second well, 185 feet west and 1,050 feet south, found the sand at 6,884 feet and was brought in as a gasser but made considerable water and was killed and deepened.

Canada

(Continued from Page 60)

wright Field is planned by a Toronto group, headed by H. W. Wright of the Wright-Hargraves and Lake Shore mining companies. The Wright group have secured 10,000 acres of oil and gas leases in the Wainwright and Fabyan sections of east central Alberta, and are negotiating with holding companies in Edmonton for additional acreage. The acreage already signed up is about 6 miles in width and runs in a northwesterly direction for about 15 miles. The acreage adjoins a block of 12,000 acres held by Marvel Oils, Ltd., chiefly north of Fabyan townsite in Townships 46, 47 and 48, Range 8w4.

A number of wells drilled in the Wainwright area have yielded small quantities of asphaltic crude from a sand at around 2,000 feet depth. The Fabyan area on the other hand is largely a gas area, with possibilities of crude oil at greater depth. The wells in the Wainwright area are individually small producers and some difficulty has been experienced securing markets for the asphaltic crude, which is of a type not handled in the large western refineries. The program of the Wright interests is understood to involve extensive development work and possibly the handling of groups of small wells by central pumping equipment, thereby reducing production costs. The group is also considering the erection of its own refining plant specially adapted to handling the heavy crudes. The plant will also take production of independent producers in the same field. The securing of Fabyan acreage is understood to link up with plans again being mooted for marketing gas from east central Alberta to Saskatchewan cities.

Saskatchewan Gas Test

In southwestern Saskatchewan, Highwood-Sarcee Oils' No. 1 on the Dirt Hills structure 50 miles southeast of Moose Jaw is reported to have spudded in. This is a test being drilled by Calgary interests headed by A. W. Dingman with gas as the primary objective. Highwood-Sarcee Oils, Ltd., holds approximately 14,000 acres on the Dirt Hills structure.

British Columbia Operations

In British Columbia, Crow's Nest Oil Co. has been incorporated to take over the interests of Crow's Nest-Glacier Oil Co. Crow's Nest-Glacier Oil Co. has been active for some years in the Sage Creek area of southeastern British Columbia, its No. 1 well being carried to 3,260 feet and encountering promising shows of light crude oil. Acreage has since been subleased to Columbia Oils, Ltd., of Vancouver, which is drilling a new test, the Crow's Nest company having one-quarter interest in production.

Ontario Gasser

In the Tilbury Field, Kent County, Ontario, Salina Oil & Gas Co.'s No. 3, William Hope farm, Lot 10, Concession 13, Tilbury East Township, was shot in the Tilbury sand. The shot increased an initial flow of 105,000 feet a day to around 1,000,000 feet, but this later dropped considerably. At last reports the crew was fishing for tools lost in the hole while cleaning. A settled production around 500,000 feet a day is looked for. Production will be taken by Southern Ontario Gas Co. which is taking gas from Nos. 1 and 2 wells. Arrangements are being made for drilling No. 4.

In the Olga Field, Raleigh Township, Olga Oil & Gas Co.'s No. 6, Larke farm, Concession 9, is drilling close to the gas horizon.

In Dover Township, Kent County, Raleigh Development Syndicate's No. 1, Stevens farm, Lot 2, front concession, is cleaning out after a series of shots in the Trenton limestone.

Hints of Practical Value

By L. G. E. BIGNELL

Petroleum Engineering Editor

Twin Wells

One of the methods followed in reclaiming oil trapped in the old sands in fields in southwestern Pennsylvania has been to dewater the sand by pumping. It is reported that when this sand was originally drilled no casing was used to hold back the fresh water and seed bags were attached to tubing instead. In time these bags rotted and water was admitted to the producing horizon and increased to such an extent that many of the wells had to be abandoned. Some of these old wells were abandoned and plugged in the usual manner, others were simply abandoned and the formation gradually slumped into the hole and plugged it. The water then entrapped the oil.

In comparatively recent years it has been decided to attempt to pump this water out of the producing sand and new holes were drilled for this purpose and shot. Some old wells were cleaned out and pumped sometimes for a year or longer without oil showing. In time, however, the volume of water declined and oil put in its appearance. These wells have in many cases produced large volumes of oil after the water had been removed from the sand. Many of them also produced appreciable volumes of wet gas that was sent to gasoline plants and returned a good profit.

Some of the new drilled wells were shot with nitroglycerin and much delay and expense entailed because of the great amount of time required for cleaning out. From the reports available it appears that these new wells were drilled into trapped oil and after cleaning out the hole they were put on the pump and produced large quantities of oil without any appreciable volume of water at first.

To eliminate this high cleanout charge a second well was drilled within 6 or 7 feet of the first hole and one of these twin wells was shot. Because of their close proximity the shot effects the unshot hole in much the same manner as though it had been shot directly and because there is but little cleaning out to be done in the unshot well it can often be put on the pump within 24 hours after the other well has been shot.

By using this system several weeks of delay and considerable expense in cleaning out is eliminated and the well can be put on production promptly. While it might appear that drilling the second hole is an added expense that would offset the cleanout costs it has been proven that this is not the case. The operating company owns its tools, and the drilling of the extra hole therefore only entails labor, and shooting. As the shooting would be done in any event it has been found that being able to put the unshot well on the pump promptly soon offsets this extra cost of drilling.

This system is cited here because it is thought that this practice may be of interest to other operators in fields where large bodies of oil have been trapped by uncontrolled water movements. It is believed that a study of the formation in such fields and the use of sand tamping in shooting one of the twin wells may prove effective in securing this trapped oil.

It would be necessary to carefully survey the two holes and map their course so that the relative positions of the bottom of each well will be known before shooting. Instruments are available for surveying and with rotary drilling properly controlled it is possible to drill relatively straight holes. Then knowing the type of producing formation the size of shot can be determined.

This suggestion is all predicated upon the assumption that the new well must be shot and after shooting considerable time will be required for cleanout work. This total cost can be estimated with a fair degree of accuracy and against it can be set up the cost of drilling the second twin well. If conditions are similar to those existing in southwestern Pennsylvania the twin well system should prove the more profitable.

Eastern Fields

(Continued from Page 56)

feet on the Henry Chandler heirs farm, and Turtle Lick Gas Co. has reached 1,750 feet in a second test on the George Thompson farm. In Sheridan district, Kanawha Gas & Utilities Co. is testing its completion on the Nona Johnson farm at 2,334 feet.

SOUTHWEST PENNSYLVANIA

Activity is increasing in Southwest Pennsylvania in both oil and gas areas. In the pool in Amwell Township, Washington County, the test of Jess Moore and others on the John Parker farm is down 1,900 feet. In the Salt sand at 1,685 to 1,765 feet, a heavy volume of gas, estimated at 1,000,000 feet a day, was struck, but it blew itself out, and is down to about 100,000 feet a day at present. Drilling is being continued. In this township, Union Gasoline & Oil Co. is starting to drill its test on the Leroy VanKirk farm. F. R. Fawcett has made a location on the C. R. Piper farm.

In Allegheny County E. A. Bream & Co. are rigging up for No. 4 on the John Poff farm in Richland Township. O. Miller is down 1,600 feet in a second test on the John Noving farm in McCandless Township.

In Greene County J. L. Garard & Co. are drilling on the John Sicklesmith farm in Greene Township. In Perry Township, Carnegie Natural Gas Co. is drilling its No. 2 on the Leasure Cowell farm deeper. It is down 1,970 feet and formerly was a gas well. In Dunkard Township, Convex Glass Co. is drilling at 720 feet on the Samuel Morse farm.

In Washington County, J. H. Wilson is down 440 feet in a second test on the Clarke farm, near Prosperity in South Franklin Township, along the Dunkard sand streak. In East Findley Township Hallam and Lewis and others have a rig standing on the H. D. Ely farm about a half mile south of production and in gas territory. In South Franklin Township, Iams Oil & Gas Co. is drilling a second test on the I. W. Iams farm and is down 500 feet.

American Firm Gets Large Pipe Line Packing Order

One of the largest orders ever placed for a pipe line packing installation has been received by the Packing Engineering Corp. of Cranford, N. J., for the Iraq pipe line. This order comprises not less than 240 installation for plungers. A total of approximately 4,000 pounds of Ace-O-Pax plastic packing will be required. It is interesting to note that the order was secured in world-wide competition, and it will be recalled that the pumps for the Iraq pipe line are being constructed in England by Worthington-Simpson.

The Packing Engineering Corp. recently completed its new plant at Cranford and the Iraq order will be one of the first to be executed in the new plant in which has been installed the latest type of machinery for the manufacture of plastic packing. The president of the Packing Engineering Corp. is Winchester Britton.

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26 West 2nd St. Cincinnati, Ohio.

USED EQUIPMENT is bringing better prices now than in years, as there is so little available to meet the rising demand. If you have used equipment in good condition, now is the time to let buyers know of it. A small advertisement in these columns will cost very little and is most certain to reach prospective buyers.

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WANT—Roller wall map of Kansas. Prefer scale 2" to mile. Smaller scale considered. Address Box F-721, The Oil and Gas Journal, Tulsa, Okla.

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